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LATE RESULTS OF PARTIAL GASTRECTOMY FOR PEPTIC ULCER

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The operation of partial gastrectomy provides a unique opportunity for considering the relation between gastric function and the general health of the patient as a whole. It is generally recognized that disturbance of this relation after partial gastrectomy does sometimes lead to constitutional changes, although there is conflict between different authorities as to the incidence of such changes.

Ten years ago Morley reviewed the results of his experiences with the Polya and the Billroth I (Schoemaker) forms of gastrectomy, and came to the conclusion that whereas a Polya gastrectomy carried with it a serious liability to anaemia, the liability was diminished after a Schoemaker operation, which was less destructive of gastric activity. It was considered wise to review the results particularly of the Schoemaker operation after a further number of years, and the present investigation was undertaken to determine the health of a series of individuals more than four years after partial gastrectomy, having special regard to gastric activity and blood changes.

Material

Sixty-seven patients who had had partial gastrectomy performed by one of us (J. M.) were examined. The interval since operation was from four to sixteen years, with an average of eight and a half years. These sixty-seven patients were not a consecutive series, but were those who could be traced and who were willing to come for examination out of 130 cases. Fifty-eight of the sixty-seven patients had undergone Schoemaker gastrectomy and nine Polya gastrectomy for the following conditions (Table I):

TABLE I.—*Operation Details*

	Gastric Ulcer	Gastric Ulcer and Duodenal Ulcer	Gastric Ulcer and Healed Duodenal Ulcer	Duodenal Ulcer	Anastomotic Ulcer	Total
Schoemaker	44	6	4	3	1	58
Polya ..	8	—	—	1	—	9

Methods

Each patient was investigated by general examination, blood count, and fractional gastric analysis. Fractional gastric analysis was carried out as follows: the patient, fasting from the night before (about twelve hours), swallowed a Ryle's tube. Any resting gastric secretion was withdrawn and 10 oz. of oatmeal gruel given by mouth. At fifteen-minute intervals 10 c.cm. samples were withdrawn. At the end of an hour 0.25 mg. of histamine was injected subcutaneously, and four further samples of gastric contents were withdrawn at fifteen-minute intervals. The gruel test meal was used, because we were anxious to know the response of the stomach to food and to have an indication of the emptying time of the stomach and of regurgitation of intestinal fluids through the stoma. Histamine was later injected so that the stomach might have the maximal acid-secreting stimulus. In each sample the free and total acids were determined, using Töpfer's reagent and phenolphthalein as indicators, the presence of starch was tested for by iodine, and the presence or absence of bile judged by the colour of the specimen.

A blood count was performed by means of the Thoma-Zeiss haemocytometer, and haemoglobin determined colorimetrically after reduction of the blood with carbon monoxide.

Results

Gastric function has been assessed from the test-meal findings, and on this basis the cases can be divided into two broad groups: (1) those whose gastric function is depressed, and (2) those whose function is active. The criteria of the former group are: emptying time below one and a half hours (average one hour), free acid values below 20 c.cm. N/10 acid (the majority in this group have no free acid), bile regurgitation freely occurring. The criteria of the group with active gastric function will be readily inferred: emptying time above one and a half hours, free acid above 20 c.cm. N/10 acid, no bile regurgitation. It is significant, and will be referred to later, that where bile regurgitation was absent free acid values above 20 c.cm. N/10 acid were usual.

In considering the results of the blood counts we have accepted 85 per cent. haemoglobin as being the lowest limit of the normal (Janet Vaughan, 1936), so that we have regarded a haemoglobin percentage of 80 or below as constituting anaemia. In all our cases of anaemia the haemoglobin percentage will be found to be quoted.

POLYA GASTRECTOMY.—*9 cases: 4 male, 5 female. Number of years since operation: maximum 16, minimum 6, average 12*

Gastric Function:

Depressed in all cases. Free bile regurgitation occurred in all. No free acid detected in any case. Average emptying time, three-quarters of an hour.

Blood Picture:

Normal count: 3 cases—2 male, 1 female.
Microcytic anaemia: 5 cases—2 male, 3 female. Haemoglobin percentages, 82 (a treated anaemia, was previously 40), 80, 63, 54, 38.
Macrocytic anaemia: 1 case—a female. Operation, 1925. 1928, microcytic anaemia (Hb 48%; colour index 0.48). 1935, macrocytic anaemia (Hb 38%; colour index 1.32).

General Health:

Good: 6 cases (Criteria of "good health": no illnesses, no complaints, working).
Good until pernicious anaemia developed, now good again under treatment: 1 case.
Fair: 2 cases. Both have microcytic anaemia with complaints of the anaemia.

Ulcer Symptoms Since Operation.—No case.

SCHOEMAKER GASTRECTOMY.—*58 cases: 43 male, 15 female. Number of years since operation: maximum 14, minimum 4, average 8. In 45 cases gastric function was depressed (Group 1). In 13 cases gastric function was active (Group 2)*

GROUP 1 CASES: 45 cases—31 male, 14 female

Gastric Function:

Depressed in all cases. Bile regurgitation present. Free acid: in 34 cases no free acid detected; in 11 cases free acid was between 1 and 20 c.cm. N/10 acid. Average emptying time, 1 hour. In 27 of these cases gastric function was greatly depressed (comparable with the Polya cases).

Blood Picture:

Normal count: 33 cases—25 male, 8 female.
Microcytic anaemia: 12 cases—6 male, 6 female. Haemoglobin percentages, 80, 80, 80, 80, 80, 80, 80, 78, 72, 70, 60, 55.

General Health:

Good: 38 cases.
Good for 6 years, then developed gastric carcinoma: 1 case.
Fair: 6 cases; 4 have microcytic anaemia with complaints of the anaemia.

Ulcer Symptoms Since Operation: 1 case.

GROUP 2 CASES: 13 cases—12 male, 1 female

Gastric Function:

Active. No bile regurgitation. Free acid, above 20 c.cm. N/10 acid; average, 52 c.cm. Stomach not empty in 1½ hours.

Blood Picture:

Normal count: 12 cases—11 male, 1 female.
Microcytic anaemia: 1 case—a male. Haemoglobin, 80%. Patient recently in sanatorium; ? phthisis.

General Health:

Good: 10 cases.
Good for 7 years, then developed gastric carcinoma: 1 case.
Fair: 2 cases (one has thyrotoxicosis).

Ulcer Symptoms Since Operation:

1 case has uneasy feeling in epigastrium unless eating often. Free acid, 80 c.cm. N/10 acid.
2 cases have pain after food. Free acid, 47 and 58 c.cm. N/10 acid respectively.

Gastric Activity after Partial Gastrectomy (Polya and Schoemaker)

The chief functions of the normal stomach appear to be the early breakdown of food constituents by ferments, the intimate mixing of the food and its slow rhythmic delivery in semi-fluid form to the duodenum, and the solution of mineral constituents of the food by hydrochloric acid; but in the present state of our knowledge there is no uniformly satisfactory test for these functions. We have therefore used the information of the gruel-histamine test meal to assess gastric activity in the present series. The information consists of emptying time, amount of free acid in the stomach contents, and an estimation of any regurgitation of intestinal fluids through the stoma as judged by the presence of bile in the samples.

Using these criteria, it is seen that gastric activity was depressed in forty-five out of fifty-eight Schoemaker cases, and in all the nine Polya cases. There were differing degrees of depression. In the Polya cases gastric activity was abolished rather than depressed, for the stomach emptied very rapidly, no free acid was detectable, and bile regurgitation was so free that the samples resembled pure bile. A similar drastic reduction was found in twenty-seven of the forty-five Group 1 Schoemaker cases (depressed gastric activity). In the remaining eighteen Group 1 cases gastric activity was less completely abolished, and in thirteen (Group 2) cases gastric activity was normal. That is, in the Schoemaker cases gastric activity was greatly depressed (abolished) in nearly a half, depressed in almost one-third, and normal in about a quarter.

The three factors available from the gruel-histamine test meal are together of much more value in assessing gastric activity than a consideration of the level of acid secretion alone. There are, however, one or two points of interest as regards acid secretion in these cases, especially as various opinions are held concerning the capacity of the stomach to secrete free acid after partial gastrectomy. Originally it was considered by many that secretion of free acid was almost entirely abolished, but this is clearly not so, and series of cases have more recently been published (Klein *et al.*, 1933) showing that achlorhydria or relative achlorhydria is achieved only in about 50 per cent. of cases of partial gastrectomy. Snell (1937) points out the large number of variables which enter into the problem and which make a constant result unlikely.

In our series of nine Polya gastrectomies no free acid was demonstrated in any case, and in fifty-eight Schoemaker gastrectomies there was no free acid in thirty-four cases, relative achlorhydria in eleven, normal acid values in ten, and high values in three. That is, about 60 per cent. showed achlorhydria and 20 per cent. relative achlorhydria. The higher incidence of achlorhydria in our series may be accounted for by the large number of gastrectomies done for gastric rather than duodenal ulcers. It is recognized that reduction of free acid following gastrectomy for duodenal ulcer is less likely to occur than when gastrectomy is done for gastric ulcer, and in this connexion it is interesting to note that two of our three cases with high acid values were gastrectomies for duodenal ulcer.

The mechanism as well as the degree of reduction of free acid after partial gastrectomy is the subject of dispute. Certainly not enough of the fundic mucosa is removed to cut off the source of hydrochloric acid, unless it is believed that the capacity of this remaining portion of the stomach to secrete acid is diminished as a result of removal of the pyloric end of the stomach. A hormonal connexion between these two parts of the stomach has often been suggested but never conclusively demonstrated, and the experimental results of Priestley and Mann (1932) appear to rule out such connexion. Recently, however, Hill, O'Brien, and Wilhelmj (1937) have shown in dogs that the reduction in acidity following partial gastrectomy is greater than can be accounted for by dilution and neutralization alone, and, further, that when a pouch is made of the fundic part of the stomach and its secretion collected, much more acid secretion occurs where the pylorus is intact than where the pylorus has been removed. They conclude that there is a pathway between the pyloric and fundic parts of the stomach, possibly hormonal, possibly

nervous. The significance of this factor in man cannot yet be assessed, for it is to be noted that these results were obtained in short-term experiments in dogs, and, as Snell has observed, the human stomach has a strong tendency to return, so far as the surgical procedure allows, to its original state of both secretory and motor activity. The occurrence of acid values of 80 to 90 c.cm. N/10 acid (as occurred in three of our cases eight years after partial gastrectomy) does not suggest a lowering of acid secretion in those cases.

The factor of simple dilution and neutralization is stressed by Walters (1936) as the factor chiefly responsible for diminished acid values after partial gastrectomy, and the significance of this factor is further emphasized in our results. It was a notable feature of our case groups that achlorhydria was usually accompanied by free bile regurgitation, and that when free acid was demonstrable there was very little or no regurgitation of bile. This occurrence of free acid without bile and achlorhydria with bile was so marked that it is not reasonable to consider it to be a coincidence, but rather that the presence of bile indicates dilution and neutralization, and that free acid is probably secreted in many of the achlorhydric cases only to be rendered incapable of detection by free regurgitation of duodenal contents and by rapid emptying of the stomach. This observation is further supported by the nine Polya cases, in none of which was free acid detected and in all of which regurgitation of bile was a pronounced feature. It should be observed, however, that it is unlikely that free acid secretion is of significance in such cases because of its prompt dilution and neutralization.

Although the Polya series is a small one, it would appear that Polya gastrectomy leaves a very rapidly emptying stomach with free regurgitation of intestinal fluids and consequently no detectable free acid; and that Schoemaker gastrectomy gives a similar result in some cases, but that in many regurgitation is not so free, emptying of the stomach is not so rapid, and reduction of free acid not so great. It does not seem reasonable to conclude that there is much difference between the amount of acid secreted after the two operations, or that true achlorhydria is produced in more than a few cases. Whether the differences between the two types of gastrectomy are of significance either locally as regards further ulcer formation, or constitutionally, will be discussed below.

Blood Picture after Partial Gastrectomy

The occurrence of anaemia after partial gastrectomy has frequently been noted, and although expectations of a macrocytic anaemia have only occasionally been realized, microcytic anaemias of varying degrees of severity have often been observed. Now that it is understood that a macrocytic anaemia follows absence of intrinsic factor (haemopoietin) from the alimentary secretions, and that the first part of the duodenum probably shares with the pyloric part of the stomach in the secretion of intrinsic factor, development of a macrocytic anaemia after partial gastrectomy is not to be expected to occur frequently. Such expectations are borne out in our results. In sixty-seven patients there were nineteen with anaemia—eighteen of them microcytic in type and one who was originally microcytic and subsequently became macrocytic.

Of the nine patients with Polya gastrectomy six were anaemic, with haemoglobin ranging from 80 to 38 per cent.; all these cases were microcytic in type originally, but one subsequently developed true macrocytic (pernicious) anaemia. Of fifty-eight patients undergoing Schoemaker gastrectomy thirteen were anaemic, all microcytic in character, with haemoglobin ranging from 80 to 55 per cent.

Investigation of the relation between gastric function and anaemia in the fifty-eight Schoemaker cases revealed a very interesting condition. Thirteen patients had anaemia, and twelve of them belonged to the group in which gastric function was depressed (forty-five cases). Only one occurred in the group in which gastric function was active (thirteen cases), and there was reason to doubt the gastric origin of this anaemia because of a history of sanatorium treatment for lung disease (? pulmonary tuberculosis). It was stated above that in the forty-five Group 1 cases (gastric function depressed) there were varying degrees of depression, and that gastric function was largely abolished in twenty-seven of the cases and was less severely depressed in eighteen. It is therefore interesting to note that ten of the patients with anaemia belonged to this subgroup of twenty-seven cases whose gastric function was largely abolished. That is:

> Ten patients were anaemic out of twenty-seven whose gastric function was largely abolished.
>
> Two patients were anaemic out of eighteen whose gastric function was depressed.
>
> One patient was anaemic out of thirteen whose gastric function was active. (The anaemia was probably not gastric in origin.)

This suggests that the cause of the anaemia may be associated with the gastric conditions peculiar to the Group 1 cases. The question of the intrinsic factor does not, we consider, enter into the problem here, for none of the anaemias are macrocytic in type. The three significant features of gastric activity of Group 1 cases are rapid emptying, free regurgitation of intestinal fluids, and absence of free acid in the gastric contents. Free regurgitation of intestinal fluids dilutes and neutralizes any acid secreted by the stomach. Absence of free acid does not in itself lead to anaemia (Bloomfield and Polland, 1933; Wilkinson, 1937), but it may predispose to anaemia by interfering with normal solution of iron in the stomach and possibly with its absorption in the upper jejunum (Witts, 1936). The role of hydrochloric acid in this connexion has, however, not been entirely proved, and the other factor, that of rapid emptying of the stomach, may be of greater significance by causing incompletely mixed under-digested food constituents to be hurried through the duodenum and upper part of the jejunum, and so interfering with iron absorption. The cause of these microcytic anaemias thus may be diminished iron absorption resulting from severe depression of gastric activity. It is well known that considerable improvement is obtained in such post-gastrectomy anaemias by the administration of massive doses of iron.

This conclusion, which emerges from a study of the Schoemaker gastrectomy results, is further supported by those of the Polya operations. Depression of gastric function was particularly severe in the nine patients with Polya gastrectomy, and among them there were six patients with microcytic anaemia (one subsequently becoming macrocytic). Table II contrasts the test-meal findings in the anaemic patients with those in patients showing a normal blood picture.

It will be noted that of the sixty-seven patients in this investigation forty-seven were males and twenty females. Of the nineteen cases of anaemia nine were males and ten females—that is, a greater tendency to anaemia is found in females than in males. This would be expected from the normal tendency for women to have a lower haemoglobin percentage than men, and from their peculiar

liability to achlorhydric anaemia. The gastric origin of anaemia in these cases is, however, stressed by the fact that a definite proportion of the cases of anaemia occurred in men. Idiopathic microcytic anaemia in men is described by Witts (1930) as a haematological curiosity.

TABLE II

	Microcytic Anaemia (19 cases; Hb 80% or less)	With Normal Blood (48 cases; Hb more than 80%)
Form of gastrectomy ..	Polya, 6 Schoemaker, 13	Polya, 3 Schoemaker, 45
Sex	Male, 9 Female, 10	Male, 38 Female, 10
Emptying time (average) ..	42 minutes	80 minutes
Bile:		
Present ++	18	20
,, traces	1	16
None	0	12
Acidity:		
No free acid	17	27
Below 20 c.cm.	1	9
Above 20 c.cm.	1 (sanatorium case)	12

The case of microcytic anaemia subsequently becoming macrocytic is of interest. Wilkinson (1933), Janet Vaughan (1932), and Heck and Walters (1936) have described cases showing that an anaemia may change from typical microcytic to macrocytic type within a few weeks, particularly under the influence of iron therapy. In the present instance it is known that iron was given for some months before the patient was sent in 1935 for blood examination, and it may be that this is a comparable occurrence. We feel, however, that the problem may be a more complicated one and that there is not enough evidence to form a conclusion.

If depression of gastric function leads to anaemia it would be expected that the operation that produced more severe depression would have the higher incidence. The following figures are therefore of significance. The same standard of anaemia is adopted as in this paper.

Gordon-Taylor, 1929:
Fifty-two Polya gastrectomies, two to seven years after operation. Anaemia in twenty-eight cases.

Morley, 1928:
Twenty Polya gastrectomies; average period since operation, seven years. Anaemia in sixteen cases.

Total of Morley's figures (that is, 1928 and 1938):
Twenty-five Polya gastrectomies; average period since operation, nine years. Anaemia in nineteen cases.

It is thus clear that in the hands of one surgeon a gastrectomy that produces severe depression of gastric activity has a much higher incidence of post-operative anaemia (Polya, nineteen out of twenty-five) than a gastrectomy that is less destructive of gastric function (Schoemaker, thirteen out of fifty-eight). And it follows that where gastrectomy is performed for gastric ulcer one aim should be to construct the stoma so that the emptying time of the stomach is prolonged and regurgitation of intestinal fluids lessened, if the risk of post-operative anaemia is to be reduced as much as possible. It is our opinion that this is more readily to be obtained with the Schoemaker modification of the Billroth I operation than with the Polya gastrectomy. These remarks apply to the treatment of gastric ulcer. In duodenal ulcer, where the risk of recurrence is much greater, the more destructive Polya operation has definite advantages.

General Health after Partial Gastrectomy

In our sixty-seven cases the general health was good in fifty-five—that is to say, there had been no serious illness, and the patients made no complaints and were able to do full work.

In two cases gastric carcinoma developed after six to seven years of perfectly good health following Schoemaker gastrectomy. It so happened that each patient was examined within a few weeks of the onset of symptoms of carcinoma. In one case gastric function was depressed and in the other it was active. The occurrence of carcinoma must have been unconnected with the original ulcers, for in neither case was there any digestive upset or premonitory symptom until a sudden onset of digestive trouble six to seven years after operation, while histological examination of the original ulcers proved their benign character.

In ten cases the general health was fair, and efficiency could be described as about 50 per cent. Six of these cases had microcytic anaemia and the complaints were those of the anaemia. As there were nineteen cases of anaemia in the whole series it is seen that in thirteen—that is, in about two-thirds of the anaemic cases—the anaemia was not producing any symptoms. Apart from the tendency to anaemia in the cases where gastric function was depressed, there was no appreciable difference between the general health of those cases and of those in which gastric function was active. It is of value to note that severe depression of gastric activity appears to affect adversely only the blood-forming mechanism and has no other ill effects on the general bodily processes.

Four patients complained of abdominal pain in relation to food—one whose gastric function was depressed and three whose function was active. Since there were fifty-four cases (Polya and Schoemaker) in the former group and only thirteen in the latter it is evident that, while depression of gastric activity carries with it a risk of anaemia, it carries a greater certainty of freedom from ulcer symptoms. It is generally considered that such freedom is associated with marked reduction or abolition of free acid, and this conclusion is in accord with our findings. It is a most interesting point; for whereas acidity *per se* does not appear a sufficient explanation of the aetiology of peptic ulcer, yet marked reduction in free acid, and not merely removal of the ulcer-bearing area, is necessary if risk of further ulcer symptoms is to be avoided so far as possible.

Summary

1. Nine cases of Polya gastrectomy and fifty-eight cases of Schoemaker gastrectomy were investigated more than four years after operation.

2. Different degrees of depression of gastric activity were found, and the mechanism of this depression is discussed.

3. Where gastric activity was severely depressed there was a high incidence of microcytic anaemia. It is suggested that absence of free acid plus rapid emptying of the stomach may interfere with the absorption of iron and so cause anaemia.

4. Depression of gastric activity was less severe after Schoemaker gastrectomy than after the Polya operation, and the incidence of anaemia was therefore correspondingly less after the former operation.

5. Where gastric activity was not depressed there was a risk of further ulcer symptoms.

6. The bearing of these results on the technique of gastrectomy is discussed.

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THE PROGNOSIS OF ANXIETY STATES

BY

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Anxiety is regarded by McDougall (1936) as the emotion produced when, in the course of striving towards some goal, we doubt whether we shall achieve the desired end. It is a derived emotion, and sharply to be distinguished from fear, which is a primary emotion. Henderson and Gillespie (1936) define anxiety in the psychiatric sense as "a fear of danger usually from within—that is, impending physical illness." Fear and anxiety seem clinically to be different degrees of the same emotion, and may be regarded as pathological when they are aroused without reasonable cause.

Pathological anxiety is a common feature of every form of psychosis, and may be the most prominent one in the prodromal stages. When it occurs as the sole abnormality, apart from depression, the condition is known as anxiety neurosis or anxiety state. Lewis (1934) and Curran (1937b) have recently pointed out that anxiety is a common concomitant of depression and, conversely, that depression is a common concomitant of anxiety, so that it is impossible to draw a sharp dividing-line between depressive states on the one hand and anxiety states on the other. No frankly psychotic syndrome, however, will be diagnosed as an anxiety state.

Little has been written about the course of an anxiety state, but many observers have noticed a strong tendency for hypochondriasis to accompany anxiety and with the passage of time partly to replace it, one of the most comprehensive papers on the subject being by Brown (1936). Ross (1923) and Yaskin (1936), among many others, consider that the development of a psychosis is exceedingly rare.

Difficulty of Measuring Anxiety

In scientific work quantitative measurement is a necessity, and consequently many efforts have been made to devise a measure of anxiety, so far with little success. Since mental processes cannot be measured the problem is usually attacked through the autonomic nervous system, the close connexion between which and anxiety has been demonstrated by Cannon and his co-workers (1915). Jones (1936) finds that anxiety and sympathetic activity are apparently synonymous, both being evoked by adrenaline and abolished by acetylcholine. One method which has been regarded as very promising is that of the psychogalvanic reflex, but Landis (1932) in a comprehensive summary of the literature states that quantitatively the method is useless, although it is produced by sympathetic action, and in a later paper (1933) he envisages the possibility of a satisfactory technique being worked out. Ödegaard (1932) believes that an index of the vegetative emotional reaction in general can be obtained from it. Solomon and Fentress (1936), however, in a careful investigation found no correlation between the galvanic skin reflex and autonomic activity, following on a previous paper (1934) in which they put forward the possibility of measuring "bound" and "unbound" energy. Psychological methods have also been tried, such as the measurement of the reaction time to word stimuli (Ebaugh, 1936), but quantitative exactitude has not been claimed for them. Culpin and Smith (1930) have found some correlation between a clinical estimate of anxiety and performance on the Schuster dotting machine.

The above-mentioned difficulty of measurement is most noticeable in the publication of results of the various modes of treatment, such as baths, massage, and other physiotherapeutic measures (Engelhorn, 1910), injection of polyglandular extracts (Léopold-Lévi, 1933), continuous narcosis (Ström-Olsen and McCowan, 1934), psychotherapy (Wenger, 1934; Luff and Garrod, 1935; Yaskin, 1936; Neustatter, 1935; Huddleson, 1927), and institutional treatment combined with psychotherapy (Ross, 1936). Such terms as "improved," "moderately improved," and "slightly improved" are in general use, although they are obviously unsatisfactory, elastic, and liable to variation according to the degree of optimism of the therapist concerned. Ross (1936), Luff and Garrod (1935), Curran (1937a), and Neustatter (1935) have given definitions of these terms, but none of them include details of the condition of the patients when first interviewed, and the degree of improvement is not measured by objective standards.

The prognostic studies of anxiety states published up to the present time fall into two groups, the first of which is the above-mentioned results of treatment. Systematic follow-ups were not always undertaken, but Luff and Garrod have traced their cases for three years and Ross some of his cases for five years and the rest for three years. Both have used the method of follow-up by letter. Luff and Garrod have 220 anxiety states in their series, and 30 per cent. of the cases treated were untraceable. Ross makes no distinction between hysteria and anxiety neurosis. Nearly 50 per cent. of his cases were untraceable.

It is extremely difficult to compare these results on account of the differences in diagnostic grouping of cases, criteria and classification of end-results, and methods, but the percentage of cases whose progress was satisfactory varied between 40 and 80 and that of cases developing psychoses and committing suicide was always very small.

The second group consists of clinical impressions, and gives no figures. For example, Wechsler (1929) stresses the skill of the psychotherapist, the age of the patient, and the degree of introversion, expressing the opinion that the illness in the case of female patients may stop at the menopause; Karpman (1931) holds the view that the provision of psychotherapy of an analytical type is all-important; and Ross emphasizes the purposive character of the illness, attaching considerable prognostic importance to the question of whether it is providing a satisfactory solution to the patient's difficulties or merely transferring

him from the frying-pan to the fire. The last-named author also regards the personality of the patient as of great significance in this respect, especially his concept of himself: "Blessed are the humble, for they shall be cured." As a corrective to the assumptions of some writers Curran (1937a) studied cases which have received little or no treatment. His main conclusions were that spontaneous recovery can occur and that there is no special liability to organic disease in these cases.

There has been extraordinarily little attempt to make a statistical study of factors which may possibly affect the prognosis. Luff and Garrod find that length of treatment and the age of the patient have little effect on the result, but that psychopathic heredity and adverse early environment are definitely unfavourable.

The frequency with which organic conditions are misdiagnosed as functional is of considerable importance with regard to the prognosis of anxiety states and has been interestingly dealt with by Comroe (1936). Following the widespread acceptance of the implication of Cannon's work (1915) on the emotional reaction, many conditions previously recognized as having a vague neurotic background—such as nervous dyspepsia, the Army D.A.H., and mucous colitis—are acknowledged to be manifestations of pathological anxiety. They are therefore very closely allied to anxiety neurosis or even identical with it. Many workers go further and postulate the initiation of organic changes through disturbance of the autonomic nervous system. Conditions the aetiology of which has been explained on these lines are gastro-duodenal ulcer, ulcerative colitis, bronchial asthma, and the various allergic conditions, hyperpiesis, nephrolithiasis, rheumatism (Halliday, 1937), and many others. The whole very extensive literature is well summarized by Dunbar (1935). The incidence of organic disease in patients suffering from anxiety states is therefore of interest, but the only inquiry into it that I can find is that of Curran.

Objects of Present Investigation

The objects were threefold: (1) To obtain a reliable follow-up over a period of not less than ten years of an adequate number of cases of anxiety neurosis and to record the findings in readily comprehensible terms. (2) To determine what factors affect the prognosis, so as to afford some guidance in this respect. (3) To determine whether anxiety neurosis predisposes to any organic condition.

Methods of Investigation

The cases chosen were those seen at the Maudsley Hospital during the years 1924, 1925, and 1926 in which the diagnoses were "anxiety neurosis," "anxiety state," "anxiety," "anxiety with depression," and "anxiety hysteria." Cases where the diagnosis was doubtful and given in some such terms as "anxiety state, ? schizophrenia," were rejected, as also were four cases developing an agitated depression within a fortnight of admission to hospital. Patients under the age of 15 at the time of their first visit to hospital were also rejected, as it was felt that the conditions termed anxiety states in children were not necessarily identical with the anxiety states of adults and that it would be confusing to group them together. Patients over the age of 45 at the time of their first visit to hospital were also excluded, as it was felt that the many factors operative during the involutional period would be impossible to assess and would make the results difficult to interpret. The procedure adopted was to send out a circular to all the patients concerned, inquiring after their health and asking them to call at the hospital if possible. Where no reply was received a call was made at the address in question in an endeavour to see the patient; if he no longer lived there further efforts were made to trace him. Finally, a list of the untraceable cases was sent to the Registrar-General and a search for them made in the register of deaths, also to the Board of Control with the object of ascertaining how many were in or had been in mental hospitals. An interview with the patient was always sought, but proved impracticable in a few cases in which adequate information was obtainable in other ways—namely, an interview with a close relative who was living with the patient, a report from the hospital of which he or she was an inmate, and in one case a letter from her doctor in answer to a questionary. The following examples will show how unreliable letters from patients can be.

A married woman writes that her nerves are completely cured and that she is getting on very well. When interviewed she complains of palpitation, shortness of breath, and extreme fatigability, ascribing these symptoms to her heart. A cardiologist reports that she is a well-compensated case of mitral stenosis and that her cardiac condition cannot possibly account for any of her symptoms.

A single man writes: "I am fairly well at present in health. I have been fairly well since I saw you as a patient ten years ago." He had actually been treated for schizophrenia for two years in a mental hospital and is now living with his parents in a docile, mildly demented condition.

Classification of Cases

The above-mentioned difficulty of measurement was tackled by means of the following simple system of classification according to severity based on the social consequences of the illness. It depends on the patient's reaction to the anxiety rather than on the degree of anxiety, but it is just this aspect to which the attention of both the patient and the community is usually directed.

Grade 1.—Unable to pursue their occupations on account of anxiety symptoms and consequently supported by the Public Assistance Committee or by their relatives or friends.

Grade 2.—Able to work and earn a living, but forced by their symptoms to modify their lives considerably, resulting in much limitation of their interests and activities.

Grade 3.—Able to lead normal lives, but at times seriously inconvenienced by symptoms or suffering from some persistent phobia.

Such a classification does not take into account the inherent strength of the patient's personality, as does that of Luff and Garrod. It merely describes his reaction to his present environment. I submit, however, that in the present state of our knowledge it is impossible to prophesy how a patient will react to varying circumstances with any degree of accuracy, and any attempt to do so is futile in a study such as this. The distinction between Grades 1 and 2 is of the greatest social importance, both for the welfare of the community and for the preservation of the individual's position in it as a respected member. The distinction between Grades 2 and 3 usually becomes apparent if one questions the patient as to whether he is prevented by his symptoms or fears from engaging in any normal activity. For example, inability to go out alone, to walk along a crowded street, to talk to strangers, or to attend a cinema or football match would place a patient in Grade 2, whereas if he is able to do these things at the expense of occasional fits of palpitation, trembling, sweating, etc., he will fall into Grade 3. The test is what the patient can do rather than what he feels in the first

two grades. The distinction between Grade 3 and normality, on the other hand, depends on the presence or absence of symptoms—a readily applicable criterion. I have considered the inclusion of a fourth grade, comprised of people who are not regarded by their companions or themselves as ill but have obviously unsatisfactory personalities and temperaments, worrying over trifles, dismayed by difficulties, with pronounced hypochondriacal trends, and so on. I rejected the idea, since the differentiation of such a group from the normal must depend entirely on the opinion of the physician, and so can only result in the type of confusion that I am trying to avoid.

In practice I found this system very easy to apply and closely related to the subjective feelings of the patient concerning the severity of his illness. As an example of a case the grading of which was not obvious at first sight, a married woman complained of a phobia of open spaces and large rooms. By questioning her it was elicited that she was able to go out to do her household shopping, but suffered from anxiety attacks in consequence. She was fond of visiting her sister, who lived some five or six miles away, but rarely did so, as she felt that the price that she would have to pay in the shape of unpleasant symptoms was too great. She was unable to attend a performance in a large cinema near her home, although she felt quite comfortable in the small ones. It was obvious from this information that she fitted into Grade 2.

When the material had been collected it was analysed with regard to the various factors that might conceivably affect prognosis. Their incidence in the cases that recovered and in the cases that did not recover was determined, and the two were compared. A full medical history was taken in each case and particulars of any illness obtained from the patient himself and from any hospital where he had been treated.

Results

A total of 259 suitable cases were discovered in the records and satisfactory follow-ups were obtained in 123 cases. Of these, thirty-eight were well, sixty were suffering from anxiety states, nine had developed psychoses, and sixteen were dead. Five of those who had died were traced through the Registrar-General, and two of those who had developed psychoses were traced through the Board of Control. Of the remainder, 120 were untraceable, ten were living out of London, and six either were unwilling to be interviewed or their relatives were unwilling to show them the hospital letter, in two cases due to fear of upsetting the patient on account of the bad state of his nerves. The high percentage of untraceability is unfortunate, and, I think, due largely to the migrant habits of the London population, a large proportion of whom live in lodgings and change them frequently.

Patients Who are Well.—Thirty-four patients were interviewed, and in the remaining four the account of their present condition and their past history was obtained from the wife or mother of the patient. As regards duration of recovery, thirty-two had been well for eight years or over so far as their neurotic illness was concerned, one had been well for between five and eight years, three for between three and five years, and two for between two and three years. All the Grade 2 and 3 cases, except one, had been well for over eight years.

Cases Still Suffering from Anxiety States.—Of the sixty patients in this group fifty-four were interviewed, in three other cases the wife was interviewed, in two cases a report was received from the mental hospitals in which they were voluntary patients, and in the case of the remaining patient, who lived out of London, her doctor was good enough to answer a questionary on her history and present state of health. With regard to their present condition, eleven cases were in Grade 1, twenty-one were in Grade 2, and twenty-eight were in Grade 3. Nine of the eleven patients in Grade 1 were very chronic cases and had done no work for ten years. In only one case was the condition worse than that at the time of the first visit to Maudsley Hospital.

Intermittent Cases.—Three of the recovered cases had suffered relapses and eight of the "anxiety states" had undergone remissions. It seemed in these to be a matter of chance whether they were classed as recovered or not, according to the particular phase in which one found them at the time of the inquiry. The duration of the remissions varied from nine months to eleven years. This type of case accounted for half of the recovered cases who had been well for less than eight years. It is worth noting that only eleven of the cases were intermittent and that only five other cases showed marked fluctuations in severity, so that the state of these patients appears to be fairly constant. It must be realized, however, that the source from which this information was obtained—namely, the patients' memory—was not really reliable.

Cases which Developed Psychoses.—The psychosis developed was schizophrenia in seven cases and recurrent depression in two cases. In five of the schizophrenic cases, from the notes made at the time, the diagnosis of anxiety state seemed very doubtful, and it is extremely probable that they represent mistakes in diagnosis. One other has been treated for twelve years in the out-patient department as a chronic "anxiety state" and has only within the last two or three months developed delusions of persecution of a bizarre type—an undoubted early schizophrenic reaction. Two of the patients who appeared in the next group died in mental hospitals, where they were under treatment for schizophrenia and agitated depression respectively. It is impossible to be sure that all these cases were traced, especially in view of the smallness of the number reached through the Board of Control. There are many possibilities of leakage, the chief being that psychotics may not be brought to the notice of the authorities.

Patients Who had Died.—The causes of death were suicide in three cases, pulmonary tuberculosis in three cases, chronic nephritis in two cases, and in one case each, accident, cerebellar tumour, thyroidectomy, appendicitis and generalized peritonitis, carcinoma of the breast, carcinoma of the stomach, and bronchopneumonia.

Features of Prognostic Importance

I now come to the second object of my investigation—namely, the discovery of which features are and which features are not of prognostic importance. I will discuss each feature separately, utilizing the ninety-eight cases in the "recovered" and "still anxiety state" groups for the purpose.

Table showing whether or not it was the Patient's First Attack of Neurosis

	Recovered	Still Ill
First attack	35	49
1 previous attack	1	7
2 or more previous attacks	2	4

Of the three recovered cases who had had previous attacks, two had suffered relapses since their visit to Maudsley Hospital and so are regarded as in the intermittent group. In other words, only one of the fourteen patients who had had previous attacks made a satisfactory permanent recovery. The occurrence of a previous attack therefore seems prognostically unfavourable for permanent recovery.

Duration of Illness before First Visit to Out-patients' Department in the Eighty-four Cases where it was the First Attack

	Recovered	Still Ill
Under 1 year	21	12
Between 1 and 2 years	9	4
Over 2 years	4	33
Unascertainable.. ..	1	0

There was a recovery rate of 65 per cent. in those cases where the duration was less than two years and of 11 per cent. in those where it was over two years. These figures are statistically significant. Of the eleven cases at present in Grade 1 eight had a history of over two years' duration before their first visit to the hospital.

It will be seen that the prognosis is better and the patient is more likely to recover completely if the attack has not lasted for more than two years. On the other hand, the chances of complete recovery are small if the condition has lasted over two years, but the outlook for return to work is always quite good. Nevertheless the possibility that the patient will persist in Grade 1 must be borne in mind, as this occurred in 24 per cent. of the cases with a history of over two years.

Severity of the Illness

Grade at Time of First Attendance at Hospital	Recovered	Still Ill
1	19	37
2	7	21
3	12	2

We see from this that the outlook in Grade 3 cases is very good, but that the outlook in Grade 1 and 2 cases is comparatively poor. These figures are statistically significant.

Amount of Treatment Received.—On the whole more energy was expended before a Grade 1 case reached Grade 3 than in the return of a Grade 3 case to complete health. The best results were obtained in cases which responded rapidly, and those which had required prolonged treatment were on the whole disappointing.

Unfavourable Environment.—I define "unfavourable environment" as severe financial or family worries which would present serious difficulty to a healthy person—for example, desertion by a husband, prolonged unemployment, or much ill-health in children or spouse. It was present in eight of the recovered cases and twenty-two of the anxiety states during the past ten years—that is, 21 per cent. and 37 per cent. respectively. It seemed, therefore, to have a less definitely adverse effect than one would expect, but the number of cases involved is too small for any importance to be attached to this finding.

Psychopathic Family History.—I define "psychopathic family history" as psychosis or severe neurosis—namely, definite nervous breakdown—in one or more parents or siblings. It was present in thirteen of the recovered cases and twenty-four of the anxiety states—that is, 34 per cent. and 41 per cent. respectively. This suggests that it is of no real significance from a prognostic point of view; but one must bear in mind the difficulty of obtaining accurate information from the patients (Slater, 1935) and the possible multiplicity of genetic factors involved.

Obvious Precipitating Cause.—It is commonly supposed that if neurotic illness has some obvious precipitating cause in the form of some definite psychic trauma the outlook is better than if it develops insidiously "out of the blue." Some physicians may be more ready to find a precipitating cause than others, but in this series of cases the out-patient officers appeared to have no individual predilections in this respect. It was present in six of the recovered cases and twenty-two of the anxiety states, so that if any conclusion can be drawn from such a small number of cases it does not appear to be a favourable prognostic factor. The patient will always tend to exaggerate the part played by the trauma, which must be a matter of some doubt. There was one case in which the condition was precipitated by head injury and which made a good recovery, but I regard it as in a different category from psychic traumata.

The Menopause.—There were six cases in which the onset of the disease was at the menopause. Four of these recovered and two were still "anxiety states." Three of the recovered patients have subsequently reached the menopause; none of them experienced any return of symptoms at that time. Twelve of the "anxiety states" have subsequently reached the menopause, and only one of these experienced any exacerbation of symptoms during it.

Pregnancy.—Of the nulliparae who have had children since their first attendance at hospital three recovered completely. Two of the patients dated their recovery from a pregnancy and two "anxiety states" described spontaneously, as a curious fact which they had noted, that they experienced a remission during pregnancy and that their anxiety returned within about a fortnight of their confinement. This affords some slight indication that pregnancy may exercise a beneficial effect.

SYMPTOMATOLOGY

Efforts were made to group these cases according to their symptomatology—namely, the predominance of neurasthenic symptoms, hypochondriacal symptoms, etc.—but every scheme tried proved unworkable on account of the great variety of symptoms and the multitude of combinations in which they appeared. It was possible, however, to isolate a small group of twelve cases in which the anxiety was not diffuse, as in the majority, but concentrated in definite phobias or clear-cut anxiety attacks, suggesting a mechanism analogous to the conditioned reflex. Three of these recovered and nine persisted as anxiety states. Examination of individual cases showed that definite phobias and clear-cut isolated anxiety attacks tend to persist longer than generalized anxiety and militate against complete recovery. They not infrequently remain as residual symptoms in cases which have improved from Grade 2 to Grade 3, for example.

The chief factor in the determination of the symptomatology seems to be the personality of the patient. The outcome in markedly introverted patients appeared quite good, and certainly no worse than in the rest. Personality traits of the type generally known as psychopathic, shown by persistently inadequate response to difficulties or anti-social behaviour, were definitely unfavourable, and many of these patients persisted in Grade 1.

OTHER FACTORS

Other possible prognostic factors investigated were sex, age, civil state, occupation, and physique on the lines indi-

cated by Kretschmer (1925) and by Draper (1930), but no significant results were obtained. The figures are given in the following table.

	Recovered	Still Ill
Sex:		
Males	17	18
Females	21	42
Age at onset of illness:		
15 to 25	12	16
25 to 35	13	29
35 to 45	13	15
Civil state:		
Married women	12	29
Single women	6	9
Women married since first attendance at hospital	3	4
Married men	13	12
Single men	2	3
Men married since first attendance at hospital	2	3
Occupation:		
Women: Housewives	15	29
Office and shop workers, etc.	3	9
Factory and domestic workers	3	4
Men: Office and shop workers	6	4
Artisans	9	11
Labourers	2	3
Physique:		
Pyknic	11	14
Leptosomatic	15	34
Athletic	8	6

I must now turn to the third object of my investigation—namely, the physical diseases to which these patients are liable.

PHYSICAL DISEASES DEVELOPED BY THE PATIENTS

In only one case does the error of regarding an organic condition as functional appear to have beeen made, the patient dying a year later of compression of the medulla by a cerebellar cyst. The organic illnesses developed by the ninety-eight patients in the "recovered" and "anxiety state" groups, subsequent to their first visit to Maudsley Hospital, were as follows: gastric ulcer with subsequent pyloric stenosis successfully treated by operation, one case; haematemesis of unknown origin (in spite of full investigation), one case; gastric carcinoma, one case; arthritis, four cases; "muscular rheumatism," five cases; cystitis, two cases; renal calculi, one case; toxaemia of pregnancy, one case; eczema, two cases; urticaria, one case; herpes zoster, one case; phlebitis, two cases; pneumonia, two cases; salpingitis, one case; small-pox, one case; diphtheria, one case. Laparotomy was performed in four cases with no benefit to the patient in spite of division of adhesions, slinging operations, etc. Acute appendicitis occurred in one case, and removal of nasal polypus and resection of septum was necessary in one case. An operation for hernia was performed in one case, tonsillectomy in two cases, colporrhaphy in one case, and myomectomy in one case. The blood pressure was taken in every case seen, and definite hyperpiesis (180/100 or over) was found in five cases, four of which were suffering from anxiety states, while the fifth had extensive renal damage due to calculi but no neurosis. There were no cases of bronchial asthma or hay-fever, and the sole representative of the whole allergic group was one rather doubtful case of urticaria, alleged by the patient to have been diagnosed as such by his panel doctor. The syndrome of vagotonia was carefully looked for, but nothing resembling it was seen except in one case, a man who was subject to fainting fits with a pulse rate in the neighbourhood of 65. On the other hand, the rapid labile pulse, dilated pupil, and moist skin of sympathetic overaction was common in the anxiety states, as was only to be expected. Hyperthyroidism was observed at the onset of four cases, although they now show no signs of it, and three of them are classified as recovered. As regards functional somatic symptoms, severe dyspepsia occurred in eighteen cases and "nervous diarrhoea" in two cases, one of which subsequently progressed to mucous colitis. We see, therefore, that twenty-one cases were severely troubled with gastric symptoms, but that in only three of them was there evidence of an organic lesion. The patient who had carcinoma suffered from gastric symptoms for only six weeks before his operation.

The incidence of arthritis of various types seems rather high, as also does that of "muscular rheumatism"—that is, vague pains and stiffness in various parts of the body; and actually nearly 10 per cent. of the cases (nine out of ninety-eight) in the groups "recovered" and "anxiety states" had suffered severe disability at one time or another from some disease of the rheumatic group. However, quoting from a Report of the Ministry of Health (1924), "2.76 per cent. of the total list strength were attended by their insurance practitioner for rheumatic disease" in the year 1922 alone, so that it is probably no higher than among the general population.

Four of the cases of hyperpiesis were in the age group 35 to 45, and the fifth was in the age group 25 to 35. There were nineteen cases in the age group 15 to 25, which can be presumed to be immune from the development of hyperpiesis, leaving seventy-nine cases in the age groups 25 to 35 and 35 to 45. This gives an incidence of 6 per cent., not a strikingly high figure. I think that the absence of vagotonic and allergic disturbances is noteworthy, and feel that there must be a sympathetic overactivity in these patients which prevents their appearance. A mild degree of hyperthyroidism is not uncommon in a recently developed anxiety state, but calls for no special treatment and does not affect the prognosis.

Concerning the observations that anxiety in the course of time tends to be converted to hypochondriasis, I found some cases in which this was a striking feature. It was by no means universal, however, and did not occur in the majority of cases. Six of the recovered cases and ten of the "anxiety states" give evidence of hypochondriasis at the present time, the percentage of the total being 16.5. It may seem somewhat anomalous to talk of hypochondriasis in patients who are well, but I have done so in the type of person who complains of no symptoms but is unduly fussy about his diet or other matters supposedly affecting his health.

Summary and Conclusions

An attempt was made to ascertain the present condition and past history of 259 cases which had been diagnosed as anxiety states between ten and twelve years ago. From the material collected a search was made for features of prognostic significance and for any evidence of increased susceptibility to organic disease. Of the cases 46 per cent. were untraceable and 6 per cent. were traceable but inaccessible, so that a satisfactory follow-up was obtained in only 48 per cent. Of these, 31 per cent. were well, 49 per cent. were suffering from anxiety states, 7 per cent. had developed psychoses, and 13 per cent. were dead. It is probable that the great majority, if not all, of those who had died were traced.

The main prognostic points elicited were as follows. Anxiety and its clinical manifestations may persist unchanged for ten years and over, and the percentage of cases in which it is converted to hypochondriasis is small. The prognosis is fairly good if the condition is of less than two years' duration, and, conversely, it is poor but not hopeless for ultimate and permanent recovery if the condition is of longer than two years' standing. On the other hand, the patient's chances of returning to work are always quite good, as only 20 per cent. of those unable to work persisted in that state. If the patient's habits or mode of life remain substantially unchanged by the anxiety the prognosis is good. The outlook in cases with markedly psychopathic personalities is poor.

There was no evidence of increased susceptibility to organic disease in these patients.

The difficulties and possible fallacies are discussed.

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At the International Congress of Microbiology in London in July, 1936, Professor Johan stated that, as a result of the successful immunization against diphtheria of large numbers of children in Hungary, a law making immunization compulsory would probably come into force in 1937. The English text of the Order is now available, and public health experts will watch its operation with close interest. Immunization, apparently with three doses of toxoid, must be carried out in the second year of life and again in the sixth year, unless the child has suffered from diphtheria, or undergone an equivalent series of injections, or is excused because of illness. Curiously enough, there is no mention in the Order of immunization with alum toxoid, which is effective in two doses, nor of Schick-testing either before or after immunization.

THE OBSTETRICAL "FLYING SQUAD"*

BY

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The emergency service—the so-called "flying squad"—is now an essential part of a modern maternity service. The expert attention, and the surgical and other adjuvants which are included in the outfit, meet a long-felt want.

The bulk of midwifery in this country is conducted in the homes of patients, the majority of whom are not in a position to pay for expert service. This knowledge has often handicapped the doctor in charge of the case, who has had to tackle major problems single-handed or to send the patient into a maternity hospital.

Expert service before the war, so far as working-class patients were concerned, was mainly immobilized in maternity hospitals. Post-war there has been a slow relaxation of this system. Health authorities offered consultations in puerperal pyrexia, and very gradually a more extended service of expert advice or assistance was offered at all stages. This is still far from being universal or comprehensive. In the Newcastle area, with few exceptions, the authorities offer the doctors a fully comprehensive service at all stages.

The emergency service, which is everywhere adopted in that area, is a something by itself. The essential points are that expert attention is immediately forthcoming, while the outfit, which is accompanied by a nurse, contains all reasonable surgical requirements and also those things which are often lacking in an industrial household, such as blankets, hot-water bottles, basins, and so on. It is especially designed to deal with those acute crises which may occur in the most carefully supervised case but are more liable to happen in the present somewhat disjointed system of maternity service. Shock and post-partum or ante-partum haemorrhage are typical examples of the cases most urgently in need of such a service, but threatened or actual eclampsia and difficult labours or "failed forceps" cases would derive benefit also.

It is obvious that expert service given on the spot to a patient who is shocked and collapsed from post-partum haemorrhage and with a retained placenta is preferable to the delay and handling of a desperately ill woman entailed by sending her in an ambulance to hospital. For local calls the service can be in the patient's house as soon as an ambulance would be likely to arrive, and for distant calls long before the patient could have reached a hospital.

Working of the Service

A doctor faced with an emergency sends a message to the maternity hospital giving his name, the name and address of the patient, and the name of the consultant on the panel he wishes to attend. He may also give some details of the nature of the case. This message is sent by private telephone or by a telephone kiosk, or by one of the police-box telephones. On receipt of the message the hospital telephones for a taxi and details a nurse to go with the outfit, which is kept packed and ready. The consultant is telephoned, and if he is not in then the others on the panel are approached. When one is ob-

* Read in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Plymouth, 1938.

tained he is given the message, and goes direct to the patient's house, taking his usual outfit with him.

There is a friendly rivalry as to whether the nurse or the consultant will reach the patient first. On arrival at the case the nurse discharges the taxi, which can be sent for when necessary. For cases over five miles from Newcastle the consultant calls at the maternity hospital and takes the nurse and outfit with him in order to save needless transport charges. The nurse detailed is usually one of the district staff nurses, but a more junior nurse is occasionally sent. It is most important that the outfit should be clearly labelled with details of the contents of each package so that a nurse unacquainted with its contents can find them readily. The Newcastle outfit consists of a large tin, a large package, a drum, and some oddments such as a cylinder of oxygen and a container of gum saline. It can easily be carried in the boot of a motor car.

The panel of four is composed of those engaged in private consulting practice in the city. For consultations other than emergency doctors make their own arrangements direct with the consultant, as in private practice.

The outfit, with a nurse in attendance, has been placed at the disposal of the Newcastle doctors, since it contains many things that might be most useful in a difficult case and yet not one that requires the presence of an expert. Those doctors using it have to be responsible for the fee for the use of the outfit and for transport charges.

The service started in October, 1935, and there was only one call that year. In 1936 there were eleven calls, and in 1937 twenty-one calls. There were thirteen calls in the first half of 1938. A steadily increasing demand is made on the service, but not nearly as large as it should be. Badly shocked, exsanguinated, and sometimes moribund women are still sent to hospital from time to time: in 1936 eleven women were admitted suffering from shock and loss of blood, mostly due to placenta praevia, and died within a few hours of admission. It is impossible to believe that some of these deaths could not have been avoided had the emergency service been called in.

Certain of these disappointments are explained by failure of the authorities to give the service sufficient publicity. The profession is a constantly changing one, and annual reminders should be sent out. There is also the instinctive tendency to ignore literature received in open envelopes with halfpenny stamps. Other disappointments are due to the deep-rooted belief in hospitals and the marvels that they can accomplish held by the relatives, who no doubt bring pressure to bear. They are unaware that the residential staff may only be a very junior house-surgeon. Another factor is a dread on the part of certain doctors that the patient will be required to pay a part or the whole of the charges incurred by calling in what is believed to be a free service. Whatever the explanation, my colleagues and I are convinced that we have saved a number of lives—and in just such cases as those which simply cannot be saved when first seen at the maternity hospital.

Cases Attended

The service was called to forty-six cases, as follows. One or two were purely consultative.

P.P.H.	2	Failed version	1
P.P.H. and shock	11	Prolonged labour	1
Retained placenta	5	Prolapse of cervix	1
Retained placenta and P.P.H.	7	Pulmonary embolism	1
Miscarriage and haemorrhage	9	Ruptured uterus	1
Septic abortion	1	Collapse	1
"Failed forceps"	4	Acute yellow atrophy	1

Results

There were five deaths among those treated; the causes were as follows:

1. Obstructed labour due to a double monster. When first seen the patient was moribund.

2. Collapse some days after an abortion. The patient was dying of hyperacute sepsis.

3. Acute yellow atrophy. The patient died some days later.

4. P.P.H. and shock, with retained placenta. The patient had a huge fibroid, which was mistaken for a second child. She got over the immediate danger, but the fibroid became infected and she died some three months later when an attempt was made to remove it.

5. "Failed forceps" case. The patient was exhausted and shocked, and the foetus was anencephalic. She appeared to get over the confinement, but collapsed suddenly next day. The cause of death is uncertain.

Apart from these deaths, most of the other patients were exhausted, and in many instances badly shocked and even exsanguinated. Some were described as fainting and pulseless. Not one of these patients was lost. In nine cases they were so critically ill that they could not be moved: merely restorative measures were employed and occasionally some slight operative procedure was performed, and when they had sufficiently recovered they were removed to hospital some hours later for nursing and possibly further treatment. In a number of cases an extensive repair was carried out after dealing with the urgent symptoms.

Expenses and Fees

As regards expenses there is a charge of one guinea for the use of the outfit with the nurse in attendance. This is payable to the hospital, as also are any transport charges incurred. The fees payable to the consultant are based on the agreement we have with the individual authority for general services. Northumberland County Council pay the following fees:

> A primary consulting fee of two guineas, with a mileage rate for every mile travelled, going and coming, of 2s. 6d. (3s. between 9 p.m. and 9 a.m.). Operative fees are additional, and range from six guineas for an abdominal operation to two guineas for a transfusion. Forceps deliveries, repairs, versions, and removal of placentae are intermediate in cost.

It would interest those present to know that for some years past we have had a fairly comprehensive service agreement with both the Northumberland and the Durham County Councils. Recently they have both adopted the emergency service. In 1935 the panel of four consultants received a grand total of £126 from the former county and in 1936 roughly £200 from the latter. The advent of the emergency service will only add a very little to the expenses incurred by these authorities.

Conclusion

The need for such a service was advocated by me in the *British Medical Journal* of April 13, 1929, and in *Public Health* the same year. I find that Bellshill gave a practical trial of the suggestion in 1931. Newcastle was the first medical school centre to put it into operation. Its running is simplicity itself, but for efficiency there must be a central call office responsible for receiving the messages. The panel should consist of all the recognized consultants in the work in any area who care to serve. In more outlying areas the panel could comprise those general practitioners conversant with obstetrics who

commend themselves to their local colleagues in a consultant capacity. The details of the outfit can be elaborated or amended according to the wishes of those who use it.

I feel convinced that a modified outfit should be at the disposal of every doctor and midwife, to make good the deficiencies of many industrial homes. Some emergencies are preventable, and will tend to be eliminated by the improved standard of medical and nursing supervision which is being developed and by the closer co-operation which will result between the two services.

Outfit for the Emergency Service

This outfit is contained in (i) a bundle, (ii) a square case, (iii) a drum, and (iv) oddments.

Bundle (weight 21 lb., measurements 20 × 10 × 10 in.):

- 2 brown blankets
- 2 sheets
- 4 hot-water bottles
- 2 mackintoshes (1 sheet, 1 apron)
- Bed-pan
- Rectal saline apparatus
- Tin containing 1 oz. glucose

Square case (weight 27 lb., measurements 20 × 10 × 10 in.):

- 2-pint measure
- 1 small and 2 large basins
- Obstetric straps
- Flask of sterile water
- Saline tablets
- Lotion thermometer
- 2 sterile dressing towels and mackintosh
- 1 hand towel
- 1 pair of sterile gloves
- 1 bag of sterile swabs
- 2 pairs dissecting forceps
- 6 pairs artery forceps
- 3 scalpels
- Needles
- Aneurysm needle
- Scissors
- Kidney dish
- Nail-brush
- Intravenous saline apparatus
- Intra-uterine douche apparatus with Bozeman's nozzle
- Hypodermic syringe
- 10 c.cm. Record syringe
- Sims's speculum
- Catgut
- Silkworm-gut
- Rubber catheter
- Dettol
- Pituitary
- Erbolin
- Morphine, digitalis, strychnine, lobeline
- Atropine
- Brandy
- Adrenaline
- Camphor in oil
- Tinct. iodine
- Spirit soap
- Anaesthetic mask
- Methylated spirit
- Coramine
- Minim measure
- 2 oz. measure
- Novocain
- Chloroform
- Ether
- Drop corks

Drum (weight 12 lb., height 10½ in., circumference 32½ in.):

- Wool
- Gauze (2 rolls)
- Lint
- Gloves (2 pairs)
- 2 sterile gowns
- 2 sterile masks
- Doctor's hand towel
- 4 dressing towels

Oddments:

- Oxygen cylinder with tubing and funnel
- Flask of gum saline
- CO_2 apparatus for babies

SEPTAL DEFLECTION*

BY

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I have for some time had an uneasy feeling that there is a tendency to blame this deformity for many more ills than it deserves and consequently to employ operative correction much more often than is actually necessary. Let me admit at once that there are many reasons for this. A twisted septum is a definite, quickly seen abnormality and a handy explanation of many ills of obscure origin. The operation of submucous resection is a pleasant and straightforward one—being, in fact, the favourite operation of many specialists. It does not cause extreme discomfort for the patient; and, if performed with care according to reliable technique, does not result in any lasting harm. So that even in the case of the most careful and scrupulous among us a septum bent or a little to one side is sometimes an undisguised blessing.

This paper is based on an investigation of a series of cases in which a diagnosis of septal deflection was made by various examiners. The frequency with which deflection occurs to a varying degree with or without ill effect would suggest that it is not the condition of the septum which causes disease but the liability to congestive and infective processes in the presence of a narrowed airway. How often are we right in assuming that this irregularity in development requires to be changed artificially by operation? And are we not too frequently apt to forget the compensatory character of Nature? It is often only during a routine examination of the nose that a septal deflection is discovered with no associated complaints of obstructed breathing, headache, catarrh, etc. This state exists in many cases with very severe deviation. Other factors must therefore be present to give rise to the conditions commonly credited to a septal deflection. With regard to its frequency, are we right in saying that because the nasal septum is not exactly in the middle line it is abnormal? At any rate in European skulls and on clinical examination it would seem to be more the rule than the exception, the percentage being variously quoted as between 60 and 80. It has been seen in infants of a few weeks old, occurring more often in males than in females and slightly more to the left than to the right. For some reason it is the exception in aboriginal skulls: is this because of a purity of racial development, whereas through the ages many races have combined to give the European his ultimate size and shape? The majority of septal deviations are not associated with disease or discomfort.

The Role of Trauma

With regard to the origin of septal deviation, few of the patients examined in this investigation can recall an injury likely to have been the cause. Opinions differ very greatly as to the part played by trauma; some say it is the common cause, others that it is the exception. It certainly seems possible for many injuries to the nose to occur in early childhood—as in falling, for example—that would not be recollected in adult life. Such injuries may twist the cartilage without external change; and, in fact, traumatic changes will be found mostly in the cartilage. Although it is impossible to say how far injury has influenced the development, there remain, I think, a majority of cases in which the origin would seem to be developmental. And why not? Should the septum be the one structure to be absolutely straight and in the dead centre? Superficial examination, even a casual glance, will show that none of us has two equal sides to the face. It is interesting to note, on radiographing the skull, how often a difference in size exists and how often a septum is deflected to the smaller side. The nasal cavity, turbinals, and sinuses are frequently noticeably smaller on the convex than on the concave side. It does not necessarily follow, because of the high percentage of septal deviations, that there is a perceptible difference between traumatic and non-traumatic causes in this regard. Acceptable suggestions as to the cause include defective development of the septum itself and its upper and lower boundaries. This would occur with the high palate so common as the result of adenoids, with an abnormally low cribriform plate and flat nasal bridge, and is even more likely still when both these conditions exist.

Effects of Septal Deflection

Unless so great as to be noticeable externally, a septal deviation attracts attention by interfering with breathing and the drainage of the nasal cavity and sinuses. Middle-

* Read in the Section of Oto-Rhino-Laryngology at the Annual Meeting of the British Medical Association, Plymouth, 1938.

ear and tubal conditions, especially catarrhal ones, are found with great frequency in association with septal deviation, but the suggestion is made that these are most commonly seen after the establishment of sinus disease. When severe it may cause pain by pressing on the lateral nasal wall. The blockage of sinus drainage is by far the most troublesome effect and the one calling most persistently for relief. In these cases the septal deflection is commonly most acute high up, and many, probably the majority, are the result of injury. Is there any difference between the effect of a sudden change of the size and shape of the nasal cavity by traumatic deviation of the septum and the result of a septum deflected during development? It seems reasonable to suppose that, given equal conditions of infection, the case with a traumatic deviation of the septum will be likely to have more trouble from a sinusitis than the developmental case or the case of long standing. In the former there is not only the effect of the trauma but also the larger turbinals. In the latter there has been an accommodation of structures and functions to meet the irregularities, as, for example, the shrinking or the smaller development of turbinals. Why does a septal deflection produce a greater liability to disease? A sudden traumatic change in aeration and drainage is understandable as a cause of trouble; but, in regard to other bodily aberrations, are the parts concerned more susceptible to bodily disease than those absolutely normal? If so, and if the septal deflection is looked upon as an abnormality, then those liable to disease from this cause are in the majority. There certainly seems to be a tendency for diseased conditions such as sinusitis to be found more often on the side of the septal deflection. Is this definitely due to the presence of the septal deflection, or does the septal deflection not rather make drainage difficult and so the relief of disease and symptoms? Is not sinus disease, at first, part of an ordinary rhinitis, showing itself as an entity only when the resolution does not progress, as in the nasal cavity itself? In those cases of septal deflection with no symptoms Nature has made compensation for the difference in size of the two nasal cavities—for example, the larger inferior turbinal on the concave side. The position of the septum does not seem to have any pathogenic effect: its action is purely physical, and is shown after the onset of disease, especially by interfering with efficient drainage of sinuses.

Grounds for Operation

It is interesting to wonder on what grounds we should perform submucous resection of the septum. I suppose most of us would agree that a badly deflected septum obviously obstructing breathing to the patient's discomfort, a similar septum preventing the drainage of sinuses and impeding the return of the patient to good health, or a septum by its pressure on opposing surfaces causing acute pain, are all circumstances warranting procedures for moving the septum out of the way. Most of us would agree that the operation of submucous resection in one form or another is best suited to this purpose. Attention to the septum in this way will reduce the necessity for turbinotomy to a minimum. Apart, however, from these more insistent conditions, many minor disorders of the nose and its vicinity are found in conjunction with a septal deflection where the question of operating on the septum also frequently arises. Possibly in this group of cases our tendency is to interfere too often with the septum, and it is, I think, here that the results of such interference do not seem to favour it. The results, at any rate in some hands, are disappointing, and, I believe, for at least two reasons. First, the psychological one—both for ourselves and for our patient—that, although generally no harm is done, our surgical procedure has not removed the original disorder. Secondly, that owing to the presence of so definite a condition as a septal deviation many minor but more persistent disorders escape our notice. Even although so many deflections produce no symptoms, can we, with one such individual, ever be right in advising the straightening of the septum as a preventive of serious disease in view of the ever-present possibility of nasal infection; or should we rather wait for the acute symptoms to arise and then do our submucous resection in case trouble should arise again? This is an age of prevention in medicine, but I think there will be few among us who would be willing to go to these extreme lengths "just in case."

CALCIUM MANDELATE AND SULPHANILAMIDE IN TREATMENT OF URINARY INFECTIONS

BY

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Mandelic acid has its well-defined indications in the treatment of urinary infections. It is most efficacious against *B. coli* and enterococci, but usually fails in *B. proteus* and staphylococcal infections. Schnohr (1937), Hryntschak (1937), Melton and Rosenheim (1938), and Kunstmann (1938) report series of cases treated with the calcium salt of mandelic acid. This salt is an insoluble tasteless powder which does not mix with water and can be given with milk or jam. Calcium mandelate is marketed by British Drug Houses as mandecal, and this was the preparation used in the present series of tests.

Recently the group of compounds of which sulphonamide, prontosil, and streptocide are the best-known members has been used extensively in the treatment of urinary infections (Garrod, 1938; Cokkinis, 1938). To compare the efficacy of calcium mandelate with the sulphonamide group of urinary antiseptics we took two series of cases of urinary infections and tried to treat each series, according to indications set out below, with the respective drug.

Indications for the Use of Mandecal.—Mandecal has the same indications as all the other mandelates. The renal function should be good, so that the urine may speedily attain a *p*H of 5.5 or less. Mandecal is most effective against *B. coli.*

Indications for the Use of Sulphanilamide.—Sulphanilamide exerts its bacteriostatic action best in an alkaline medium. The kidney function may be good or moderately impaired. It is equally effective against *B. coli*, haemolytic streptococci, and *B. proteus.* It does not act on enterococci.

Two questions arise: Which drug fulfils the optimal requirements in sterilizing the urine in the shortest time, with the least amount of toxicity, in a given infection?; and Which treatment is the cheaper?

1. Mandecal

Mandecal was found to acidify the urine of healthy individuals very quickly. In a self experiment the urine became strongly acid within eighty minutes of the in-

gestion of 4.5 grammes of mandecal (*p*H 7.6 to *p*H 5). On ingestion of mandecal, free mandelic acid is rapidly and almost completely excreted by the kidneys: the calcium is fixed to an acid radical and an acid urine is excreted to maintain the acid–base balance.

TABLE I.—*Cases treated with Mandecal (71 per cent. Cures)*

Type of Case	No.	Cures	Failures
(1) Chronic urinary infections	12	9	3
Pyonephrosis	1	—	1
(2) Urinary infection occurring together with :			
Chronic nephritis	1	—	1
Focal nephritis	1	1	—
(3) Hypertension	2	2	—
Microcytic anaemia	2	1	1
Rheumatoid arthritis	1	—	1
Diabetes mellitus	3	2	1
Ulcerative colitis	3	2	1
Various conditions	5	5	—
Total	31	22	9

Causative Organisms.—In all but two cases *B. coli* was the organism concerned, the exceptions being two mixed infections: one with enterococci and haemolytic streptococci, the other with *B. coli* and haemolytic streptococci.

Clinical Results.—Using a standard dosage of 4.5 grammes of mandecal four times daily, we could prove that calcium mandelate acidifies the urine sufficiently to be an effective urinary antiseptic. The salt is pleasant to take, and in no case was the vomiting noticed which is so common after ammonium mandelate medication. The cases treated have been divided into three groups: (1) those showing signs and symptoms of cystopyelitis; (2) those suffering from haematogenous bilateral renal disease and concurrent urinary infections; and (3) cases in which a bacilluria was discovered on routine examination, without clinical symptoms of urinary infection. Those cases in which treatment failed are shown in Table II.

TABLE II.—*Cases in which Treatment Failed*

Diagnosis	Urine Culture	Duration of Treatment	Remarks
Group 1 :		Days	
Cystitis (male aged 52)	Heavy mixed inf., enterococci and haem. strept.	10	
Pyelitis (female aged 5)	Moderate growth of coliform bacilli	17	Urine difficult to acidify; lowest *p*H 6.7
Cystitis (male aged 21)	Heavy *B. coli*	12	*p*H never below 6.1
Cystitis (male aged 20)	„ „	10	
Group 2 :			
Chronic nephritis	*B. coli* and haem. strept.	10	Could not concentrate sufficiently; S.G. 1010
Group 3 :			
Microcytic anaemia	*B. coli*	11	
Rheum. arthritis ..	„	14	
Ulcerative colitis	„	14	
Diabetes mellitus	„	5	Left ward before investigations were finished

The duration of treatment varied from three to twenty-six days, the average being nine days. Hryntschak is of the opinion that calcium mandelate should not be used for periods longer than ten days, but I have never observed any nausea coming on after this time. No toxic symptoms were noticed, and the only difficulty encountered in taking the powder was due to the fact that mandecal floats on water.

The results compare favourably with those obtained with ammonium mandelate (Holling and Platt, 1936; Kunstmann, 1938). Hryntschak and Rosenheim both agree that mandecal is easier to take and less nauseating than ammonium mandelate; Kunstmann, however, found it less palatable. We can fully confirm the former authors' findings.

The cost of treatment with mandecal for a period of seven days amounts, according to the manufacturers (B.D.H.), to 8s. 4d. (hospital price).

2. Sulphanilamide

Since 1935 the number of favourable reports on the treatment of urinary infections with sulphanilamide has been steadily growing. This drug has the advantage of rendering the urine slightly alkaline (Marshall *et al.*, 1938), and can be used during the acute stages of pyelitis and cystitis. It is directly bactericidal, and is more active in an alkaline medium (Helmholz, 1937a, 1937b).

TABLE III.—*Patients treated with Sulphanilamide (75 per cent. Cures)*

Type of Case	No.	Cures	Failures
Acute pyelitis	2	2	—
Chronic pyelitis	3	1	2
Chronic urinary infection	2	2	—
Urinary infection combined with :			
Acute nephritis	2	2	—
Chronic nephritis	2	—	2
Chronic peritonitis	1	1	—
Diabetes	3	2	1
Myxoedema	1	1	—
Ulcerative colitis	1	1	—
Pulmonary tuberculosis	1	1	—
Rheumatoid arthritis	2	2	—
Total	20	15	5

Clinical Results.—A standard dose of 1.5 grammes of sulphanilamide a day was used, as suggested by Kenny *et al.* (1937). Only one toxic sign was noticed—namely, cyanosis. It occurred in three cases: one was an acute nephritis, the other two being chronic renal failure where isosthenuria already existed. All three patients lost their cyanosis quickly after cessation of treatment with sulphanilamide. The cases were again divided into three groups in the same manner as those treated with mandelate.

Failures:

Chronic cystopyelitis in a man of 52; heavy mixed infection with enterococci and haemolytic streptococci. Treatment was continued for only ten days because the patient left hospital. (Previous mandecal treatment without success.)

Chronic pyelitis in a man of 34. Left hydronephrosis, right kidney not functioning at all. Enterococci and lactose-fermenting coliform bacilli. Patient developed cyanosis; drug stopped on tenth day. Chronic nephritis. Both this and the previous patient were already beyond an expectation of cure. Both had isosthenuria and rising non-protein nitrogen. One was a case of mixed infection with haemolytic streptococci, the other with enterococci and coliform bacilli; the latter developed cyanosis after seventeen days' treatment, when the drug was discontinued.

Diabetic cystitis in a female of 65 due to *Staph. aureus*. Treatment for a fortnight did not remove the infection. This is interesting in view of a finding of Becker (1937), who reported good results in staphylococcal cystitis.

The duration of treatment varied from three to twenty-seven days, with an average of ten days. The cost of treatment was about 6d. (hospital price).

Causative Organisms in Sulphanilamide Series

	Cures	Failures
B. coli	8	—
B. coli and haem. strepts.	3	1
B. coli and enterococci	1	2
Enterococci and haem. strepts.	—	1
B. coli and *B. proteus*	3	—
Staph. aureus	—	1

(The mandecal series, with only two exceptions, contain infections with *B. coli* according to the indications set out above.)

Conclusions

The danger of neglecting urinary infections is only slowly being realized. Evidence is accumulating that when they are insidious in their onset they may lead to a form of renal failure with contracted kidneys which shows certain typical pathological changes (Fahr, 1938). It is therefore necessary to treat all cases of urinary infection, however slight, until the urine becomes sterile.

Two drugs are at our service. Mandelic acid is indicated in chronic infections with good renal function and concentrating power in the presence of pure *B. coli* infections. The calcium salt of mandelic acid is more pleasant to take and is as efficacious in sterilizing the urine as any other mandelate. The sulphonamide group of drugs is indicated in mixed infections and in the presence of haemolytic streptococci and *B. proteus*. Mandecal shows no toxic symptoms at all, whereas sulphanilamide in the dosage indicated brought on cyanosis in only three cases. No other toxic symptom was observed.

Summary

An account is given of two series of cases of urinary infection treated with mandecal and sulphanilamide respectively. Cures were obtained in 71 per cent. of the mandecal and 75 per cent. of the sulphanilamide series.

I wish to thank Dr. R. Platt for his kind criticism and for his permission to publish this paper. I am also indebted to British Drug Houses Ltd. for a supply of mandecal.

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H. J. Burstein (*Urol. cutan. Rev.*, 1938, **42**, 575) records a case of double kidney with Y-shaped ureter and ureteral calculus in a female infant, aged 18 months, in whom nephrectomy resulted in a cure. The child was in good health a year after the operation. The condition was an embryological malformation, and the symptoms of frequent micturition, pyuria, and fever were due to hydronephrosis, infection, and stone formation. The diagnosis was made by careful examination, including cystoscopy, retrograde pyelography, and intravenous urography. In the differential diagnosis congenital hydronephrosis, congenital idiopathic dilatation of the ureters, congenital ureterocele, hydronephrosis due to anomalous vessels and other causes, and polycystic disease of the kidneys, had to be excluded.

Clinical Memoranda

Localized Hypertrophic Emphysema

One of the debated causes of hypertrophic emphysema is often said to be intermittent or partial bronchial obstruction, and in this relation the following case may be of interest.

Case Report

A Hindu of 28 years was killed in a motor-car accident, reliable evidence stating that there were no respiratory movements when the body was examined immediately after the collision. His health was stated to have been good, with the exception of a spasmodic, non-productive cough which he had had for some months, and which came on at weekly or fortnightly intervals and lasted for half an hour or more.

At post-mortem examination nine hours later the cadaver was that of a well-nourished adult. There were severe abrasions and contusions on the forehead, right cheek, occipital and suboccipital regions. There was fairly extensive basal haemorrhage and laceration of the pons. In addition, however, the postero-lateral segment of the middle lobe of the right lung had a number of small bullae on the surface, and it was much softer than the remainder of the lung. On dissection it became evident that a well-defined part of the right middle lobe was emphysematous. The bronchus supplying this section was traced, and just distal to its junction with the main bronchus to the middle lobe a small flap of the mucous membrane was found. The bronchus was three-eighths of an inch in diameter, and the flap, which was one-tenth of an inch in thickness, occluded five-eighths of the bore of the bronchus. There was a small pledget of mucus on the distal surface of the flap. Unfortunately it was impossible to preserve or photograph the specimen.

There was no clubbing of the fingers, and no other abnormality was found.

It appears that the flap of mucous membrane acted as a partial valve and gave rise to the localized hypertrophic emphysema. The bouts of coughing may have been caused by mucus occluding the bronchus completely.

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A Case of Complete Hypospadias

Cases of complete hypospadias with bilateral undescended testicles are relatively rare. The following case history may be of interest from both the anatomical and psychological aspects.

Case Record

X. Y., aged 13 years 9 months, was admitted to hospital as a girl patient on January 29, 1938. *He* complained of a swelling in the right groin, which had been noticed only a few days previously. On examination he was found to have a sturdy physique of the male type: the shoulder girdle was broader than the pelvic girdle, the chest was flat and showed no signs of breast development, the muscles were well developed, and there was little subcutaneous fat. The distribution of pubic hair was of the male type, and he had well-marked hirsuties of the face. The penis was rudimentary, about one inch long, and it had a hooded prepuce. The scrotum was completely divided and resembled the labia majora. There were no labia minora. The urethral orifice was situated just below the base of the penis, above a rudimentary vagina, which was four inches deep and less than a centimetre in diameter. A lump was palpable in the right inguinal canal, and a smaller lump could be felt in the left groin.

Orchidopexy was carried out by Mr. J. F. Gill on January 31, 1938. At the time of operation the right testicle was found lying in the lower end of the inguinal canal; it was

of normal size. There was an associated hernial sac, which was opened; the pelvic organs were palpated through this opening. No uterus or ovaries could be felt. On the left side a small testicle was found lying in the lower part of the inguinal canal. After freeing the spermatic vessels each testicle was brought down and sutured to the bottom of the corresponding half of the scrotum. On April 21, 1938, Mr. Gill carried out a one-stage plastic construction of a penile urethra. Flaps of mucous membrane were raised on each side of the urethra and sutured over an inserted rubber catheter. Healing occurred by primary union.

There is no history of a similar condition in any member of the patient's family. His parents are of average intelligence, the father is asthmatic, and he has one married sister, aged 25. At birth there was some doubt as to his sex, but it was decided that the child was a girl, and it was brought up as such.

He had always been an extremely shy child. He had no friends either inside or outside school, and never confided in his parents nor in his sister. He liked to play with dolls, and sewed clothes for them. He was also fond of cricket and football, and preferred to play with boys. His I.Q. was only 80, and he liked history, domestic subjects, and first aid best. There was no sexual history, and no information could be obtained from dreams or fantasies, as he would not relate any of these. Leading questions were of no avail. He said he preferred to be a girl, since he was brought up as one.

Shortly after completion of the operations, however, he asserted himself to an extreme degree. He was no longer shy with the other children in the ward (all girls), he played with them, and at times his attitude was overbearing and aggressive. In his play he took the role of "mother" and tended to the smaller girls, sometimes kindly, at other times not so kindly. He felt a good deal happier, was less introverted, and did not seem to be bewildered at the drastic change in his sexual identity. As psychotherapeutic treatment was considered to be a necessary measure to help establish him in his masculine role, he was sent from hospital to a child guidance clinic as an in-patient.

We are indebted to Mr. J. F. Gill, F.R.C.S., consulting surgeon, and to Dr. D. V. Marshall, F.R.C.S.Ed., senior medical officer, for their permission to publish this case.

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Aneurysm of the Common Iliac Artery

A fatal case of retroperitoneal haemorrhage following rupture of an aneurysm is here recorded, on account of the clinical picture and the rarity of the lesion.

CASE RECORD

Clinical History.—The patient, a man aged 69, was brought into hospital in a collapsed state; stimulant treatment was given, and in about an hour he was able to give a history. He had had left-sided "lumbago" for three weeks, and had a left inguinal hernia and a smaller right inguinal hernia, a truss being worn for the former but failing to control it.

Examination revealed only a lowered blood pressure, and no cause for collapse. Four hours later a large mass was found on the left side of the abdomen, occupying an area similar to that occupied by a spleen reaching the umbilicus. The mass was not movable; its edges were ill-defined, and the posterior limit not detectable; it was tender, and pulsation of a transmitted type was noted. Below this mass, just above the left inguinal ligament, lay a second firmer mass giving a direct pulsation; this smaller mass was considered by the patient to be a hernia. The urine contained albumin but no blood.

For ten hours the patient's condition remained unchanged; then he became rapidly worse and died sixteen hours after admission.

Post-mortem Examination.—There were no signs of any external injury. The abdomen contained 6 ounces of free blood in the peritoneal cavity. A very large retroperitoneal mass occupied the left side of the abdomen; this proved to be a haematoma of the left perirenal space, containing about three to four pints of blood. The effusion of blood extended across the mid-line to the right kidney region, upwards as far as the diaphragm, into the transverse mesocolon, and downwards into the pelvic cavity. The origin of the haemorrhage was found to be a saccular aneurysm the size of a cricket ball, arising from the left common iliac artery. The greater part of the wall of the vessel was involved, and the sac was partly filled with laminated blood clot. Rupture of the sac had taken place near the origin of the artery from the aorta, and the site of rupture communicated with the haematoma. The aorta showed little atheroma in the abdominal part, but some changes in the arch, and there was calcification of the coronaries. The left renal artery was normal. There was no sign of a left inguinal hernia, and the mass described as a hernia was the aneurysm. A small right inguinal hernia was noted. The other organs showed no important changes, and no evidence of syphilis was found.

Microscopical examination of the wall of the artery near the aneurysm showed advanced atheroma but no evidence of syphilis. There was considerable intimal thickening, with some calcification; the media remained intact, with no evidence of infiltration. Some round-celled infiltration of the fatty tissue was noted, and there was a great deal of fibroblastic proliferation in the wall of the aneurysm.

COMMENTARY

The case is of interest on account of the unusual site of the aneurysm and the result of its rupture. The absence of injury and haematuria excluded the diagnosis of ruptured kidney, which the abdominal findings suggested.

A review of the literature of recent years showed two other cases of ruptured aneurysm at this site, both ending fatally; also two cases were found in which the aneurysm had been successfully obliterated by Matas's operation.

I am indebted to Dr. F. E. Saxby Willis for his kind suggestions and permission to publish this case, and to Dr. E. ff. Creed of King's College Hospital for the microscopical report.

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Recurrent Ectopic Gestation

The following note of a very unusual case appears to be worth placing on record.

A married woman aged 38 was admitted into hospital on July 6, 1938, with a provisional diagnosis of ectopic gestation. She had eight children, varying in ages from 2½ to 17 years, the last two being twins. No miscarriages were recorded. She became pregnant in 1937 and was operated upon on June 10, 1937, following a seven weeks' gestation. The left Fallopian tube was found to contain an ectopic pregnancy and was removed. The patient menstruated normally following the operation until May, 1938, when the periods ceased.

The patient was examined on admission on July 6, and found to have a tender mass in the pouch of Douglas, extending to the right. Laparotomy on July 7 revealed an ectopic gestation in the right Fallopian tube, which was removed.

This case was unusual, first because the tubal pregnancy was repeated inside a period of thirteen months, and secondly because the phenomenon manifested itself after approximately the same period of amenorrhoea.

Folkestone. D. G. C. WHYTE, M.B., B.Ch.

Reviews

POLITICAL ARITHMETIC

Political Arithmetic: A Symposium of Population Studies. Edited by Lancelot Hogben, F.R.S. (Pp. 531; illustrated. 30s. net.) London: George Allen and Unwin. 1938.

This volume opens with an introductory essay by Professor Lancelot Hogben, stated (by the publishers) to be "a challenging critique of contemporary economics and an eloquent appeal for realistic research on social institutions." The first chapter is a study of the decline of fertility in the civilized world by Dr. Kuczynski. Chapter II contains arithmetical estimates of the future population of Great Britain on different hypotheses and is the work of Dr. Enid Charles. In chapter III Dr. Charles and Dr. Moshinsky examine fertility as correlated with locality and occupation. In chapter IV Mr. Glass studies changes in fertility in the last eighty years. Chapter V, by Dr. Enid Charles, is concerned with the structure of the family in Australia, and chapter VI, by Mr. Glass, discusses the relation between marriage frequency and economic fluctuations. Chapter VII, by Dr. Kuczynski, is a history of opinions on fertility held between 1660 and 1760. Chapter VIII, by Mr. Gray and Dr. Moshinsky, studies the distribution of ability and opportunities of education in a large sample of children. The same authors, in chapter IX, relate ability and educational opportunity to parental occupation. In chapter X Messrs. Glass and Gray examine the working of the scholarship system at Oxford and Cambridge. In chapter XI Dr. Charles and Mr. Morgan investigate the relation between initial and maximum earnings in skilled and unskilled workers. The last chapter, by Mr. Allison Davis, is on the distribution of the blood groups and its bearing on the concept of race.

The Lord Deputy Strafford is said to have advised anyone about to read a new book on a serious subject to note down what he knew, or thought he knew, of the subject already. At least two of the contributors to this symposium are such well-known authors that it must be difficult to carry out Strafford's prescription. We think, however, that a person so unfortunate as never to have heard of any of the present writers and not even very familiar with the voluminous official literature, but who has been a reader of the serious weekly reviews during the last twenty-five years, might think he knew: (1) That owing to the decline in the fertility of marriages, and the impossibility of an indefinite continuation of improvement in rates of mortality, the population must eventually decline. (2) That the fertilities of different groups (racial, social, economic) varied. (3) That even if the proportion of "clever" children in the "upper" classes were really greater than in the "lower" classes a great many "clever" children had poor parents, and many of these "clever" children had insufficient educational opportunities. (4) That in unskilled trades one reached one's maximum earning capacity much earlier in life than in skilled trades. (5) That race was a difficult concept to define.

When the hypothetical reader has perused the new book the addition to his knowledge will be mainly of detail. Under each of the above five headings he will find arithmetical evidence, some of it covering the whole population, some of it covering numerically important samples, and the evidence is clearly set out. Those who are bored by tables may be tempted to skip, but there is nothing in the exposition to give any reader a valid excuse to skip on the ground that mathematics are beyond him. At least one article, that by Dr. Kuczynski on the opinions of demographers, will charm those who are more interested in opinions than arithmetic.

It is possible that the style of some of the essays, particularly that of the preface, may induce the reader who had no other knowledge than he derived from weeklies to underestimate the scientific importance of work done by mere officials or even by private investigators not associated with the Department of Social Biology of the University of London. But, as scientific justice is seldom done until all parties to a suit are dead, this defect, if it be a defect, is not serious.

A SURVEY OF BILE

Bile: Its Toxicity and Relation to Disease. By O. H. Horrall, M.D., Ph.D., F.A.C.S. (Pp. 434. 18s. net.) Chicago: University of Chicago Press. London: Cambridge University Press. 1938.

With its unusual title and its icteric wrapper this book seems ill designed to attract the casual medical reader. This is unfortunate, for it contains much information of value to the general physician and abdominal surgeon, as well as to the physiologist and pathologist. One cannot pretend that the book is easy to read, for Dr. Horrall, like the disappointed professor in Conan Doyle's story, appears to have made a life interest of the study of the bile, and has collected here all that has been learnt about it since it was advised for use in enemas in an Egyptian sacerdotal papyrus of 1300 B.C. After discussing the history of his subject, Dr. Horrall describes the constituents of the bile, its origin and fate, and the changes it undergoes in the gall-bladder. If bile is injected intravenously in sufficient dosage, death occurs from stupor or with symptoms of cerebral excitation. Bile, injected subcutaneously, causes tissue necrosis and even a large aseptic abscess, and a few cubic centimetres of concentrated bile free in the peritoneal cavity cause a transudation of several hundred cubic centimetres of fluid. A distinction is drawn between *bile peritonitis*, which is caused by the chemical action of bile on the peritoneum, and *biliary peritonitis*, which is caused by bacteria in the presence of bile in man. In man the leakage of bile into the peritoneal cavity causes a very great risk, the mortality rate approximating 50 per cent. Bile can also cause acute pancreatitis.

Although a vast amount of work has been done—this book has a bibliography with over 2,000 references—we still have not really precise knowledge of the mechanism of the depressing effects of jaundice or the toxicity of the bile. Nothing other than the bile salts in whole normal bile has been proved toxic; the pigments and constituents such as cholesterol and lecithin, appear to be harmless. Nevertheless whole bile appears to be more toxic than its known constituents. Up to the present time there has been no method of determining bile salts accurately in such small quantities as may occur in the blood stream, and indeed it is not certain that they occur in normal blood. Dr. Horrall concludes that it is the bile salts that are responsible for the toxic action of the bile, and that the discoloration caused by the bile pigment—namely, jaundice—is a symptom and not a disease; a great number of the symptoms that have been attributed to bile are part of a syndrome and not directly attributable to the action of bile itself. The toxicity of the bile has been of great importance to

surgeons ever since the development of operations on the biliary system, and the discovery of the therapeutic action of jaundice on rheumatoid arthritis has now made it a practical issue with physicians. Dr. Horrall's survey is therefore timely, and subsequent workers will owe him a debt of gratitude for it.

A KEY TO BIOLOGICAL LITERATURE

Tabulae Biologicae. Edited by W. Junk, C. Oppenheimer, and W. Weisbach. Volume XIV, Part 4; Volume XV, Parts 1, 2, and 3. (Volume XIV, pp. 93; Volume XV, Parts 1, 2, and 3, pp. 288; price of one volume, Fl. 35; reduced price for subscribers, Fl. 30.) The Hague: Dr. W. Junk. 1938.

Tabulae Biologicae is an exceptionally valuable work of reference, and it is satisfactory to note that it has established its position firmly, since the volumes are now appearing more frequently, and an editorial leaflet records promises of a large number of new articles in the near future. During the last few months Vol. XIV has been completed and three-quarters of Vol. XV has appeared. The fact that two-thirds of this space is occupied by biochemistry indicates the general trend of development of biological science. The following are some of the chief subjects: the properties of sex hormones of the sterol group (120 pages of tabular matter); the descriptive and physical chemistry of proteins; the biochemistry of wheat, oats, rye, barley, maize, and rice (from the U.S.S.R.). A remarkable article by C. B. Bridges describes the location of Drosophila genes. The description of the four chromosomes occupies seven pages of tabular matter. No fewer than 150 genes have been located in the second chromosome alone.

The outstanding impression derived from perusal of these volumes is the vast amount of detailed information that has been accumulated in the last two decades by biological research. Complete new branches of science, such as the physiological actions of sterol compounds, have developed in a few years, and in such cases the reference list is numbered in thousands rather than in hundreds. *Tabulae Biologicae* provides an extremely convenient means for obtaining summarized information regarding important new developments, and the value of the publication is bound to increase as the mass of biological literature becomes more and more unmanageable.

MALARIA AND ANKYLOSTOMIASIS IN PREGNANCY

Malaria and Ankylostomiasis in the Pregnant Woman. By G. A. W. Wickramasuriya, F.R.C.P.Ed., F.R.C.S.Ed., M.C.O.G. (Pp. 179; 11 illustrations; 9 tables. 10s. 6d. net.) London: Humphrey Milford, Oxford University Press. 1937.

This is one of the two jointly awarded Katherine Bishop Harman Prize Essays of 1936 prepared for publication in book form. The book represents experience gained by the author in Ceylon, more particularly at the De Soysa Lying-in Home during the period of the epidemic, which provided unrivalled opportunities for continuous and detailed observation on a large number of women suffering from malaria of various types and varying degrees of severity. Among important effects produced by malaria in the pregnant woman are: anaemia, 10-15 per cent. haemoglobin values being not uncommon; oedema of renal or in some cases of nutritional type; albuminuria, seen in 50 per cent. of the 357 puerperal women in the author's series; and low blood pressure occurring especially in pernicious forms of malaria. In the author's experience pernicious manifestations of various kinds are more frequent in pregnancy than in the non-pregnant state, and the resemblance of some of the symptoms to eclampsia may make diagnosis very difficult. Further, malaria definitely increases the tendency to eclampsia, pre-eclampsia, and "nephritic" toxaemia. The suddenness with which pernicious symptoms may supervene and the danger of too early relaxation in treatment with the reappearance of coma, etc., is emphasized by Dr. Wickramasuriya. Spontaneous termination of pregnancy before term and death of the foetus are common effects. Infection of the foetus was present in three out of six cases of foetal death, but death may result without this—for example, from placental infection alone. Hookworm infection is a common cause of maternal and foetal mortality in the Island. An investigation made to ascertain the cause of foetal death in 648 consecutive cases of stillbirth showed that ankylostomiasis accounted for 34.3 per cent.

The work is a useful treatise on the subject of malaria and ankylostomiasis in pregnancy, backed by considerable practical experience, and should be very helpful to the practitioner who may have to deal with pregnancy in the Tropics. It contains little of interest to the parasitologist.

THE SCIENCE OF NUTRITION

Textbook of Nutrition. By J. A. Nixon, M.D., F.R.C.P., and Doreen G. C. Nixon, M.B., B.S., M.R.C.S., L.R.C.P. (Pp. 219; 9 figures. 7s. 6d. net.) London: Humphrey Milford, Oxford University Press. 1938.

For some time past the interests and publications of Dr. J. A. Nixon, until recently Professor of Medicine in the University of Bristol, have dealt largely with dietetics and the science of nutrition, so that his *Textbook of Nutrition,* compiled with the help of his wife, may be expected to present the facts in an accurate and ordered manner. It may be said at once that the book gives an admirable survey of the subject, and will appeal not only to medical men and to biochemists, but also to students of domestic economy and to laymen who require guidance in the problems of feeding children and adults and different classes of the population. After a rapid review of the physiology of digestion and absorption of foodstuffs, the requirements of the body at different ages are dealt with. For public health purposes not only anthropometrical methods but clinical observations are needed to assess the physiological efficiency and to detect early deficiency. The authors rightly point out that beyond the ordinary quantitative and balanced food requirements in proteins, fats, carbohydrates, and vitamins, individual absorptive capacity must be considered. In some communities the question of availability of foods is a factor of importance; in ours the economic question is outstanding; apparently all except a relatively small fraction of the population are obtaining the full amount of calories they require, but there may be relative shortage of fats, proteins, milk, fruit, and vegetables in some classes. On the other hand, the deficiency may not be due to poverty or ignorance but sometimes to carelessness or indifference. Instruction in housekeeping and methods of cooking must be combined with production of cheaper food or higher incomes. It would appear, however, that the standards of food requirements have not yet been finally determined.

Chapter VIII, which occupies one-quarter of the book, opens with a discussion of the principles underlying the choice of foods in ordering diet, and then gives tables of the food content and constituents of fruits, vegetables, cereals, various sweets, fish, meat, poultry, game, and animal organs. These are based on recently published analyses and are useful and accurate. A minor discrep-

ancy is that the fat content of an egg is given as 4.0 grammes on page 116 and 6.0 grammes on p. 105; this depends on the size of the egg, but the latter figure is the one usually taken. The chemists are not yet satisfied, however, and these tables, though generally accurate, may be superseded in detail, especially if portions as served at table are considered. Again, uniformity is difficult to obtain unless one standard of cooking is used. In the case of the vitamins, already there has appeared in *Nutrition Abstracts and Reviews*, April, 1938, an excellent series of revised tables of vitamin content of foods, which was probably not available to the authors at the time of going to press. Besides, these tables are rather frightening to practitioners unless they are trained in the details of dietetics. The authors thus, recognizing that these food tables "must not be regarded as possessing the reliability of *Bradshaw's Railway Guide*," counsel a rougher reckoning which will often give equally good results and include, as well as an abbreviated table of the principal foods, a series of menus which may be used in drawing up an ordinary diet. The relations of diet to disease prevention and to disease production and infections are important aspects of the science of nutrition, which are dealt with in an interesting and satisfactory way, and the final chapter on nutrition in disease supplies the principles of diet in fevers, anaemia, diabetes, renal disease, and lactation. The authors have produced a good book which should have a deservedly wide class of reader.

Notes on Books

Written with charm and clarity and recalling some of Arthur Hugh Clough's shorter verses, Dr. W. P. S. BRANSON'S scholarly thirty-eight *Sober Pieces and Songs* (Cambridge: printed for the author at the University Press) have a musical, meditative, and sometimes melancholy touch which attracts without depressing. The first item will be familiar to many old Bart's men who admired it as an anonymous poem in the *St. Bartholomew's Hospital Journal* more than thirty years ago. The printing and style of production form a most suitable setting. Inquiries for this book may be addressed to the Printer, Mr. Walter Lewis, at the University Press, Cambridge. Price 5s.

The fifth volume of the *Animal Year Book*, published by ULAWS (The University of London Animal Welfare Society, 2s. 6d.), contains several articles of exceptional interest. Sir Peter Chalmers Mitchell writes on game reserves and national parks. Discussing the possibility of their establishment in Great Britain, he mentions that in a recent departmental committee under the chairmanship of Dr. Addison (now Lord Addison) proposals were considered which envisaged the acquisition of some such region as Snowdonia, Cannock Chase, or part of the Scottish Highlands for this purpose. Sir Peter points out that, should this happy eventuality materialize, it would be equitable to make concessions, in the shape of rest-houses for walkers, car parking places, and roads of access, to the large proportion of the public which is not keenly interested in natural history. Within the precincts of a large national park smaller and more securely protected sanctuaries could readily be established. Other instructive and interesting articles deal with the whaling and sealing industries, while Dr. Brook, writing on tuberculosis in cattle and its control, makes it clear that improved conditions and humane treatment of farm animals will go a long way towards providing uninfected milk. Following nearly thirty pages of book reviews is an appendix devoted to the current activities of ULAWS, which persistently continues its advocacy of cyanide fumigation for rabbit control and its humane campaign against the use of the gin trap. Although membership of the society is mainly confined to those associated with the University of London, all members of the public who subscribe ten shillings or more are eligible as Fellows. ULAWS certainly deserves wide financial support.

Dr. PAUL SCHILDER has written much on medical psychology, and his experience in the Bellevue Hospital of New York compels respect for his contribution, *Psychotherapy* (Kegan Paul, Trench, Trubner and Company, 15s.). He definitely bases his method and theory on Freud's teaching, but does not feel bound by all the modifications of the psycho-analytic schools. The present book seeks to set out the general principles for medical psychological treatment, and gives several clinical illustrations which elucidate the argument. Many similar books have been written with almost identical contents in the last few years, and while this is a good example there is no reason to regard it as in any way outstanding.

Preparations and Appliances

ANTRUM CATHETER

Mr. C. HAMBLEN-THOMAS, F.R.C.S. (London, W.1), writes:

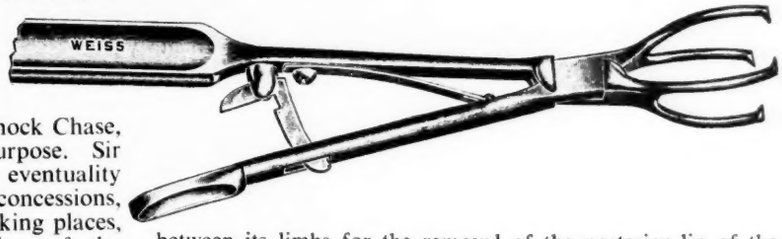
Following an intranasal antrostomy, the opening made occasionally heals rapidly and tends to close. I have had

prepared for me a rubber catheter, which I slip over a thin antrum cannula and put on the stretch with the attached clip. I insert this into the antrum, remove the clip, and withdraw the cannula. The rubber catheter expands, stretches the opening, and remains in position. The instrument is made for me by Messrs. John Bell and Croyden, Wigmore Street, London, W.1.

CLAMP FOR TARSORRHAPHY AND PLASTIC OPERATIONS ON THE LIDS

Mr. C. J. Blumenthal, Senior Resident Officer, Royal London Ophthalmic Hospital (Moorfields Eye Hospital), writes:

I have had designed for me by Messrs. John Weiss and Son, Ltd., a lid clamp which is quickly and easily applied to the lid margin, causes no trauma, and has plenty of room



between its limbs for the removal of the posterior lip of the lid margin. The handle and catch are the same as in a standard needle holder, while the two pairs of teeth are set on four slender, curved limbs, the two pairs fifteen millimetres apart.

The instrument finds a use also in operations on the upper lid where double eversion is necessary, and does away with the necessity of retaining sutures.

My thanks are due to the honorary surgeons at Moorfields who tried out the instrument and allowed me to use it on their cases.

Nova et Vetera

GEORGE III (1738-1820)

George III, the bicentenary of whose birth occurred this year, though intelligent, energetic, and a model of domestic propriety, from childhood displayed a mulish obstinacy. This led him consistently to oppose the tremendous intellectual changes which his long and singularly purposeless reign witnessed, and also directly precipitated the American Revolution. His grandfather, George II, had been subject to fits of depression which could only be solaced by music, and his father, Frederick Louis Prince of Wales, played a pitiful role in English history. On his mother's side there was feeble-mindedness verging on insanity.

Mental Aberrations of the King

The King was 27 years of age when he suffered from his first attack of mental aberration in the spring of 1765. This was evidently of short duration, and, as it was carefully concealed by his family, the records are incomplete and obscure. One hundred and fifty years ago, on October 24, 1788, he had his second attack, which has been intimately described by several witnesses. At a levee the King was noticed to act strangely and to talk incessantly until he became hoarse. He was irritable, petulant, and despotic, and soon showed undeniable signs of insanity, delusional in nature, with exacerbations of mania followed by intervals of utter depression. Naturally the monarch's illness amounted to a political crisis, and upon his physicians fell a serious, almost unprecedented, responsibility. Of these the most interesting was Francis Willis (1718–1807), who was then 70 years old.

Willis had taken holy orders in 1740, and soon afterwards was appointed vicar of St. John's, Wapping, and later of Greatford in Lincolnshire. In his spare time he prescribed for his poor parishioners and kept a successful and prosperous lunatic asylum. His medical activities angered the physicians in the neighbourhood, and, to protect himself, Willis obtained the degree of doctor of medicine from Oxford University in 1759. A man of fine presence, handsome, outspoken, and cheerful, he possessed an uncanny instinct for knowing what treatment each individual case required. When he was first introduced at Court the King expressed surprise at a clergyman practising medicine, and Willis's protest that the Saviour Himself went about healing the sick received the crushing reply, "Yes, but he had not £700 a year for it." This clerical physician was popular neither with his colleagues nor with his royal patient. George seemed to have disliked him so violently that he could never afterwards hear his name without a shudder. When he became maniacal Willis did not hesitate to have him confined in a strait-jacket. Some of his treatment was bizarre and open to censure. He allowed the patient to read *King Lear,* which he professed he had never read himself, and he even trusted him with a razor. Of all the Court physicians Willis was the most sanguine about the King's recovery. Between him and his colleagues feelings at one time became dangerously bitter, especially when a notice was displayed in the ante-room that no one was to see the monarch without the permission of Francis Willis and his son John.

The Willis Family Displaced

George III had altogether five attacks of insanity, the final one in 1810 being precipitated by the illness of his favourite daughter, the Princess Amelia. Contrary to the prognosis of his physicians, he did not recover, becoming blind and permanently deranged. While he retained his physical strength almost until the very end, what he felt most grievously was the waning of his royal prestige. During the 1801 attack Francis Willis was too old to be active himself, but he succeeded once again in assuming absolute ascendancy over the King through his sons. In 1804, however, the patient had seen enough of the Willis family, and he was now attended by Samuel Foart Simmons of St. Luke's Hospital, who for the first time dispensed correct and judicious treatment. By a strange irony of fate, he who was so tragically pursued by the spectre of insanity was also pursued at least three times by insane people, including a housemaid who fancied she had a right to the throne, a soldier, and a lieutenant. Unwittingly George III may be said to have helped revolutionize the treatment of the insane in this country after Pinel and the Tukes had paved the way.

WALTER R. BETT.

PRESIDENTS OF THE NEW YORK ACADEMY OF MEDICINE

A recent portrait exhibition of its presidents at the New York Academy of Medicine brought to life some of the most illustrious names in the history of American medicine and recalled the familiar likeness of those who have but lately vacated the presidential chair. One of the most striking pictures is that of Austin Flint (1812–86), whose name is associated with the Austin Flint murmur and who as a clinician so greatly appealed to that therapeutic sceptic, Sir William Osler, through his insistence that we have to know the course of a disease left to Nature before we can appreciate the action of the drugs given for its cure. At the time of his graduation who would have dared to treat a case of pneumonia from its beginning to its end without a drop of medicine? Valentine Mott (1785–1865) was a pupil of Astley Cooper and, like his master, excelled in daring vascular surgery. Pioneer in teaching surgery by the bedside, it was said of him that as a lecturer he combined interest with truth, suggesting perhaps that such a combination was unusual in those days. Edward Gamaliel Janeway (1841–1911), skilled and delicate diagnostician, is remembered as the great bedside physician, simple, direct, learned, dignified, and transparently honest. Abraham Jacobi (1830–1919), the Nestor of American paediatrics, delightfully blended learning and wisdom with wit and charm. The first professorship in children's diseases in the United States was founded so that he might fill the position.

Among the living the picturesque figures of Samuel W. Lambert and Bernard Sachs at once attract attention, even though the artist has scarcely succeeded in doing full justice to these two very remarkable men. Former Dean of the College of Physicians and Surgeons at Columbia University, Dr. Lambert, with his learning carried so lightly, his inexhaustible fund of inimitable, though at times Rabelaisian, anecdotes, and his hearty, infectious laugh, is one of the most familiar figures in medical New York. Dr. Bernard Sachs, who recently celebrated his eightieth birthday, half a century ago described amaurotic family idiocy, the ocular manifestations of which had been previously noted by Warren Tay.

WALTER R. BETT.

Though "albuminous urine" (to use Bright's classic phrase) had been observed as early as 1694 by Frederik Dekkers (1648–1730) of Leyden (Exercitationes practicae circa medendi methodum), the word "albuminuria," according to Vierordt's *Medizin-geschichtliches Hilfsbuch,* appeared in the literature only one hundred years ago, in the book *De l'albuminurie ou hydropisie causée par maladie des reins,* by Fernand Martin-Solon (1795–1856). To trace the pedigree of this term is a rash venture, and, while it is interesting to find that it was already familiar to Charles Polydore Forget (1800–61), professor of clinical medicine at Strasbourg ("Lettre sur l'albuminurie," *Gazette médicale de Paris,* 1837, **5**, 609), the suspicion lingers that the condition must have been thus named at a still earlier date.

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CHEMOTHERAPY OF GONORRHOEA

Gonorrhoea must surely be one of the oldest known diseases that afflict the human race, and all down the ages man has been seeking a remedy, some drug, which, taken by the mouth, will bring about a cure. Early in the present century much faith was placed in the urinary antiseptics, but these failed because, though they might render the urine antiseptic, they did not reach the germ hidden away in its impregnable fastnesses. Dyes which turned the patient's urine nearly all the colours of the rainbow may have been very successful in impressing the patient but failed to cure the disease. Vaccines, though useful in complications and in the late stages of the disease, are apt to be disappointing in the acute stages, and opinion swung back to purely local treatment and an attempt to bring about cure by encouraging the patient's tissues to elaborate antibodies. Treated in this way the average case of gonorrhoea ran its usual course over a period of six to twelve weeks, and there appeared no way of cutting short the duration of the disease until the drugs of the sulphonamide series came upon the scene. Case after case cleared up in a few days as if by magic when treated with these drugs, and people began to be as sanguine as Ehrlich was when " 606 " first came into use; relapses, however, occurred, and it was soon realized that there was much to learn before the fullest advantage could be taken of these marvellous chemicals. Nevertheless, these drugs are being widely used all over Europe and America, and various observers report from 60 to 80 per cent. of successful results.

Few will deny that in a considerable proportion of cases these drugs will cause a case of gonorrhoea to clear up as no other treatment will do, and that in a minimum of time and with a minimum of trouble. But the matter is not so simple as it seems. In the first place, what is the best dosage? It appears that a high dosage will cause a disappearance of the symptoms more quickly than a moderate or small one—but it is also more likely to cause toxic manifestations and possibly demand discontinuance of the drug. On the whole therefore it seems best to start with a dose of about 4 grammes a day of, say, sulphanilamide for four days and then drop to 3 or even 2 grammes a day for the next three days. Most of those who have experience of these remedies agree that they should be given in short bursts rather than continuously over long periods; in addition, the doses should be evenly spaced so that a fixed concentration of the drug in the blood is maintained, since this appears to be of much importance. Secondly, when should treatment be started in a case of acute gonorrhoea? There are two schools of thought: one holding that the best results are obtained by waiting two to three weeks before starting drug therapy, during which time the patient's tissues will have built up some immunity and thereby assist the drug; and the other which starts the treatment at the earliest possible moment. From the public health point of view the former appears to be the better, since cure is more certain, relapse is less apt to occur, and contagion is not likely to take place during the two to three weeks while the discharge is allowed to go on; from the patient's point of view, and especially where a rapid cure is essential, the latter course may seem preferable, since in an unpredictable proportion of cases complete cure *may* be attained in a few days.

In reply to the question, What types of case are likely to benefit? the answer is, All or almost all, though many observers think that the subacute or chronic cases do better than the very acute ones; on the other hand, many cases of acute posterior urethritis are relieved in a remarkable degree in a day or two. Complications as a rule clear up rapidly, but there is a good deal of evidence that when there is a closed focus—such as a littritis or an infected para-urethral duct—failure is frequent, and this may account for many of the relapses. Toxic symptoms are very common and vary from mild headache and a feeling of lassitude to severe blood dyscrasias; there can be no doubt that patients who are taking these drugs should be kept under almost daily observation by a competent observer and the treatment stopped if any severe symptoms—such as a considerable rise of temperature—occur; in this connexion the action of the Home Office in adding drugs of the sulphonamide group to Part I of the Poisons List is to be welcomed. Great care ought to be exercised in prescribing, since a man who has charge of the lives of others—such as a bus driver or engine driver—may suffer from toxic symptoms, and in such case can be a danger to the community. It is by now common knowledge that all forms of sulphur, such as sulphates, eggs, and onions, should be avoided by the patient who is taking a sulphonamide preparation, but apart from that toxic effects can rarely be prevented or predicted.

Much work is being done on the mode of action of these drugs; it seems probable that they act

directly on the gonococcus and will kill it *in vitro* in comparatively low concentrations; they appear to produce bacteriostasis, which goes on to bacteriolysis in favourable cases; some patients seem to conjugate the drug in their tissues less efficiently than others, which may be an explanation of some of the failures. With a few notable exceptions all those who have had experience are agreed that we now have a very potent remedy for gonorrhoea, but much more experience is necessary before the optimum dosage, the best time to begin treatment, and the general management of a case will be agreed; some give concomitant irrigations, others prefer to omit these. In any case it cannot be too strongly stressed that very great care should be exercised in employing the sulphonamides, and still more care in testing for cure, since a considerable proportion of cases relapse and the mere cessation of discharge may lull the patient into a false feeling of security with disastrous results to himself and to others. Urethroscopic, prostatic, microscopical, cultural, and serological examinations should be carried out on a number of occasions with negative results before a patient is pronounced cured.

SOCIAL SERVICE

There is probably no one better able than Mr. J. Q. Henriques to write *A Citizen's Guide to Social Service*.[1] He has a very wide and practical acquaintance with his many-sided subject; he can expound it in a clear, agreeable, and effective style and manner; and his theme is consistently maintained. This theme is, broadly, the place and value of voluntary effort in relation to the social services—housing, health, unemployment, public relief, and now occupation and community centres for the use of leisure—established by or under the auspices of central Government departments and local authorities. It is very important just now that this theme should be set out and developed, for, though a differing emphasis may be placed upon voluntary activities in this connexion by different schools of thought, nearly all will agree that they have an important, even essential, place; and yet the knowledge of the increasing provision of services publicly organized and financed tends to slacken the effort of voluntary agencies and to limit the number of their unpaid available personnel. This timely task of defining and reviewing the relative spheres of voluntary effort and of public social provision is very well done by Mr. Henriques. He sets out the nature, extent, and advantages of the several public services quite fully and fairly. Their effectiveness within their particular statutory fields, especially the strength they derive from communal organization and public financial support, is not questioned, but it is claimed that they suffer from definite disadvantages from which voluntary agencies are free, and that they tend to produce in their beneficiaries an undue and unwholesome dependence and loss of self-reliance which is not manifested when help is given under voluntary auspices. On these two propositions the author's arguments are not equally cogent. Most people will agree with his conclusions as to the former, but many will not be satisfied that he has demonstrated the latter beyond all doubt.

The point of view of the constructive social voluntary worker is contrasted both with that of the public administrator and with that of the indiscriminate almsgiver. The charitable impulses of the last group are quite uncontrolled, and their gifts are dispensed without any real justification. Yet no individual can properly be treated as a self-contained unit; he has needs and difficulties which are related to his own environment and to the general community. It is one of the prime functions of the voluntary worker to discover and to consider these. On the other hand, the public administrator as such is governed and limited by Acts of Parliament and regulations, rules, and orders which curb his executive authority and action and render him liable to public criticism both from those who think he has gone too far and from those who think he has not gone far enough. He cannot ignore these conditions, and must always tend to consider the clientele of the service he is administering as in the mass or on the average. For him experiments and the making of individual exceptions are impossible or dangerous. These, however, are not only open to the voluntary social worker but should be his business; and his task—often a hard one—is to adjust his own point of view not so much to public opinion (whether expressed by a Government department, a local committee, or otherwise) as to that of the person who has applied for help. It is manifest that there is a field in which the voluntary worker alone can safely and successfully act; and it must be clear also that he can be of very great assistance to the public administrator or authority in the detailed work of their departments. The need and the means for such co-operation are adequately dealt with by Mr. Henriques.

Sir Wyndham Deedes writes in a foreword to the book: "Not everyone will agree with all of it; I do not." Such disagreement may very likely be felt with regard to that other of the author's main propositions mentioned above. It is not obvious that dependence on voluntary help is necessarily less demoralizing than dependence on public assistance

[1] London: George Allen and Unwin, Ltd. (10s. 6d.)

statutorily provided. That such is the case is assumed rather than demonstrated by Mr. Henriques, and this seriously weakens a considerable part of his case. Every individual needs help in some form from time to time, and it is the privilege of all, at times, to give it. This should not lead to any loss of pride in independence; but if it be true that either voluntary or statutory provision does in fact undermine self-respect in an appreciable number of cases it is a disquieting symptom. Mr. Henriques believes that this is so, and his opinion must carry great weight, even though his suggested remedy may not be a complete cure.

VASOMOTOR CONTROL OF THE CEREBRAL CIRCULATION

Until recently it was generally believed that the cerebral vessels were exempt from the constant control exerted by the autonomic nervous system on the other systemic vessels. The persistence of this belief is an interesting example of that undue reliance on physiological demonstrations rather than on morphological facts which has hindered the progress of sympathetic surgery, for histological proof of the existence of a nervous network in relation to the cerebral vessels was provided by Gulland[1] and also by Huber[2] at the end of the last century. In view of recent attempts to control the factor of vasospasm by surgical means —sympathectomy for disseminated sclerosis has been described in a recent issue of this *Journal* by Koch and de Savitsch,[3] and the results of infiltration of the stellate ganglion in selected cases of apoplexy by Mackey and Scott[4]—the complete summary by Schneider[5] of the anatomical and physiological evidence in favour of vasomotor control of the cerebral circulation is of special interest. A large amount of anatomical evidence has accumulated during the last ten years. Von Stöhr[6] in 1928 described the detailed arrangement of the nervous plexus surrounding the vessels of the pia mater and the choroid plexus. Clarke[7] in 1929 demonstrated a perivascular network on the vessels of the medulla oblongata and the medulla spinalis. Penfield[8] could show the method of termination of nerves on the vessel wall. Three methods of physiological examination have been employed to demonstrate the existence of vasomotor nerves: direct inspection of the vessels through an air-tight glass window fitted in the skull by Forbes[9] in 1928; observations on the flow through the intact carotid artery with the *Stromuhr* by Rein[10] in 1930; perfusion studies on the completely isolated head by Bouckaert and Jourdan in 1936.[11] Direct inspection of the cerebral vessels during electrical stimulation of the cervical sympathetic shows a vasoconstriction, and section of the sympathetic trunk produces a distinct dilatation extending into the capillary bed. Measurements with the *Thermostromuhr* show quite plainly that stimulation of the cervical sympathetic diminishes the circulation through the internal carotid artery and that sympathetic section is followed by an increased flow. Experiments with the isolated and perfused head demonstrated clearly that vasoconstriction invariably follows sympathetic stimulation, and of course in these experiments any possibility that the constriction might be secondary to vascular changes elsewhere was quite excluded. Much work has also been done on the complex relationships which undoubtedly exist between the sensitive region of the carotid sinus and the cerebral circulation, but even neglecting this and other complicated aspects of the problem it seems clear that so far as the cerebral vessels are concerned the Monro doctrine of 1783 may now be abandoned. Indeed, when the very special needs of the cerebral circulation are considered—it has been calculated that 1,000 c.cm. of blood must circulate per minute to maintain proper oxygenation—and when it is remembered that the nerve cell is the most sensitive of all bodily structures to ischaemia, the idea that the cerebral circulation should play a passive part without means of local compensation for any accident which might affect the systemic circulation as a whole is patently absurd.

[1] *British Medical Journal*, 1898, **2**, 781.
[2] *J. Comp. Neurol.*, 1899, **9**, 1.
[3] *British Medical Journal*, 1938, **1**, 1254.
[4] Ibid., 1938, **2**, 1.
[5] *Zbl. Neurochir.*, 1938, **3**, 127; and see *Arch. f. exp. Path. and Pharmacol.*, 1934, **175**, 606.
[6] *Z. Anat.*, 1922, **63**, 562.
[7] *J. Comp. Neurol.*, 1929, **48**, 247.
[8] *Arch. Neurol. Psychiat.*, Chicago, 1932, **27**, 30.
[9] Ibid., 1928, **19**, 1057.
[10] *Z. Biol.*, 1929, **89**, 307.
[11] *Compt. rend. Soc. de biol.*, 1936, **120**, 788.

THE NATURE OF VIRUSES

The last ten years have seen a considerable advance in our knowledge of viruses. We can now measure them with a fair degree of accuracy, and many have been stained and seen with the microscope. Means have been devised for isolating them in relative purity and considerable amount; many have been cultivated outside the animal body; and we know how to preserve them without loss of potency for long periods of time. A study of virus immunity has shown that the mechanism of this immunity possesses fundamental similarities with that of bacterial immunity; one or two viruses have even been shown to possess an antigenic complexity comparable with that of bacteria. Yet with all this knowledge it is still not possible to pronounce with certainty on the nature of these agents. Despite the fact that the solution of this question is not material to the study of most virus problems, it is of such abiding interest that virus workers continue to search for the answer. One of the difficulties in the way of deciding whether viruses are living micro-organisms or unorganized chemical auto-catalysts is our inability to define with certainty what we mean by life. It is recognized, of course, that living things exhibit certain properties such as ability to multiply with retention of individuality and the power to adapt themselves to changes in environment; all these are possessed by viruses. But, as Sir Gowland Hopkins has recently pointed out, it is possession of an inde-

pendent metabolism which, in the final issue, is the hallmark of living things, and it is precisely in this connexion that the student of viruses meets with what appears to be an insuperable difficulty. Viruses can only multiply inside living cells, and in such a situation it is impossible to find out whether they possess a metabolism independent of the cells they have invaded; extra-cellularly viruses appear to be devoid of respiratory activity. Those who hold that viruses are non-living agents have always made much of this inability of viruses to multiply apart from living cells, and their point of view has been strengthened by the recent work showing that some plant viruses are crystallizable proteins. In the Rede Lecture[1] at Cambridge this year Sir Patrick Laidlaw made this question of the nature of viruses the subject of his address. Like most virus workers, he is of the opinion that the large viruses are living micro-organisms. He is also inclined to accept the evidence produced by Stanley and his colleagues in America, and by Bawden, Pirie, and Bernal in this country that some plant viruses are proteins of high molecular weight which can be crystallized without loss of activity. At first sight this would seem to mean that the group of viruses comprises agents of fundamentally different nature, but Sir Patrick Laidlaw is disinclined to accept this view, for he believes that all viruses are probably of the same nature. And in an endeavour to explain the apparent conflict in the available evidence he has put forward an hypothesis which has much to recommend it. He points out that there is much evidence to show that parasites lose the power of making substances essential to them which are to be found ready-made in the cells of their hosts, and he suggests that in the case of parasitic micro-organisms this "laziness" might be pushed to such an extreme that eventually all independent metabolic activity would be lost. The parasite would then be living a borrowed life, as Sir Patrick Laidlaw puts it, and would consist merely of specific nucleo-protein possessing the power of reproduction; outside the susceptible cell it would appear inanimate. Is it not possible, Sir Patrick Laidlaw asks, that viruses are micro-organisms committed to an intracellular mode of life which have traversed the road to parasitism to varying degree? The large viruses would thus be those which had lost the ability of synthesizing one or two factors essential to their growth, whilst at the other end of the scale would be those viruses which had lost all auto-synthetic power and possessed only the ability of transmitting the characters of the species, such as the crystallizable plant viruses and possibly the very small animal viruses. Between these two extremes would be viruses which had achieved specialization in parasitism to varying degrees, progressive loss of enzyme activity being attended with a corresponding decrease in size. The view that viruses are micro-organisms degraded through parasitism is not new, but Sir Patrick Laidlaw's hypothesis gives an explanation which embraces all viruses and links them up with free living micro-organisms. Whether he is right or not time will show. In the meantime he has provided us with a most stimulating hypothesis wherewith to plan further work in this most enthralling field of biological research.

[1] *Virus Diseases and Viruses.* By Sir Patrick P. Laidlaw. The Rede Lecture, 1938. Cambridge University Press. (2s. 6d.)

VITAMIN E

Research on the chemical nature of vitamin E has been greatly hindered by the lack of an even approximately quantitative method of determining the potency of the original material and of the various fractions subsequently separated from it. It is known that in the absence of vitamin E in the diet of rats an implanted ovum may still develop for a short time, but that resorption occurs and no young are born. The condition can be cured by giving adequate doses of wheat germ, wheat-germ oil or concentrates, or other sources of vitamin E. In the male rat degeneration of the testes results from the deprivation of vitamin E, and no regeneration of the affected parts can take place, so that if the degeneration is complete the male rat remains sterile for the rest of his life. Mason[1] has suggested that "vitamin E plays some very essential role in nuclear activities, being necessary either for maintenance of the normal physico-chemical structure of nuclear chromatin or for some metabolic process or processes concerned with the synthesis of the complex chromatin molecule." Recent work by Bacharach[2] seems to show that vitamin E deficiency leads to a failure even in implantation of fertilized ova. Barrie[3] has discovered degenerative changes in the anterior pituitary and hypoplasia of the thyroid. The latter observation had also been made by Singer.[4] Barrie[5] has also recorded cretinism in young rats born of mothers receiving suboptimal quantities of vitamin E. Evans and Burr[6] and later Burr *et al.*[7] found a paresis in rats fed on a vitamin-E-deficient diet, and could not cure it, though they could prevent it, by giving vitamin E. Neither deficiency nor excess of vitamin E has been found to have any influence on experimental or spontaneous sarcomata or carcinomata. It is considered "not proven" that vitamin E has any influence on the growth of young rats. It may easily be understood how very difficult it would be to use any of these effects of vitamin-E deficiency as criteria for the measurement of vitamin E. The best attempt to make measurable an effect of vitamin-E therapy has been made by Bacharach,[8] who has constructed a curve of response relating dosage and response to vitamin E in rats. By its use he can make comparisons between different substances, and when a standard of reference becomes available he will be able to express the potency of a substance in terms of the unit of activity adopted. In the meantime[9] he has used it to compare the potencies of α- and β-tocopherol and found the mean fertility doses (that is, the doses that will cause 50 per cent. of implanted animals to bear live litters) to be

[1] *Amer. J. Anat.*, 1933, **52**, 153.
[2] *Biochem. J.*, 1937, **31**, 2287.
[3] *Lancet*, 1937, **2**, 251.
[4] *J. Physiol.*, 1936, **87**, 287.
[5] *Nature*, 1937, **139**, 286.
[6] *J. Biol. Chem.*, 1928, **76**, 273.
[7] *Proc. Soc. exp. Biol. Med.*, N.Y., 1937, **36**, 780.
[8] *Chem. and Ind.*, 1938, **57**, 600.
[9] *Nature*, 1938, **142**, 35.

1.2 mg. and 1.9 mg. respectively. A standard of reference may, however, be adopted in the not too distant future, for in spite of all the difficulties attendant in following the fractionation of concentrates it really appears probable that pure vitamin E will shortly be available. Many workers,[10 11 12 13 14 15 16 17 18 19] as usual, have contributed to this discovery, and after separating and identifying various inactive compounds it has been accepted that both α- and β-tocopherol have vitamin-E activity, though the amount of these separated from wheat-germ oil does not account for more than about 5 per cent. of the oil's activity. The synthesis of α-tocopherol[20 21 22 23 24 25] by different workers seems to indicate that the structure proposed by Fernholz is the correct one—namely, that the vitamin has a chroman rather than a coumaran structure, with two substituents in the α-position. Evidence of the successful clinical use of vitamin E in cases of habitual abortion is slowly accumulating,[26 27 28 29 30 31] and Shute[32 33 34 35] suggests that vitamin E and oestrin, or a substance much like it, exist in a sort of equilibrium during pregnancy. If there is too much of the oestrin-like substance the pregnancy is interrupted. It is safe to prophesy that when pure vitamin E becomes available clinical trials will make rapid progress.

DIAGNOSIS OF SYPHILIS

A pamphlet issued by the U.S. Public Health Service, Washington, *The Diagnosis of Syphilis by the General Practitioner*, should have a big vogue in America and a not inconsiderable one in this country. It is often said that the average general practitioner seldom diagnoses syphilis. The reasons for this are three according to Dr. J. Earle Moore: (1) that he does not expect to meet it, (2) that he does not realize its prevalence, and (3) that very often he does not recognize it when he meets it. The essence of this little book lies in thirty "figures," in which are set out clearly and succinctly "diagnostic maxims" in early, late, and latent syphilis, and lists of other conditions which may closely simulate each of these. The moral to be drawn from it is that in any condition which could possibly be syphilitic, or in which the diagnosis is not clear, if there is an early surface lesion it should be examined by the dark-ground for spirochaetes, and in any case the patient's blood should be submitted to Wassermann and flocculation tests. Serum tests have a specificity of nearly 100 per cent. and a sensitivity of about 80 per cent. in untreated cases, and are often the only possible means of diagnosing the disease; moreover, under the venereal diseases scheme in this country they can be carried out free of cost. There is no doubt that large numbers of cases of syphilis go undetected simply because a routine blood test is not carried out on every patient who goes to hospital; if every pregnant woman had her blood examined congenital syphilis would soon become a thing of the past.

[10] *J. biol. Chem.*, 1936, **113**, 319.
[11] Ibid., 1937, **122**, 99.
[12] *Biochem. J.*, 1935, **29**, 456.
[13] Ibid., 1935, **29**, 2510.
[14] *Nature*, 1937, **140**, 361.
[15] *Chem. and Ind.*, 1937, **56** 1054.
[16] *Biochem. J.*, 1937, **31**, 2247.
[17] Ibid., 1937, **31**, 2257.
[18] *Helv. Chim. Acta.*, 1937, **20**, 424.
[19] Ibid., 1937, **20**, 1422.
[20] Ibid., 1938, **21**, 520.
[21] *Nature*, 1938, **141**, 1057.
[22] *Science*, 1938, **88**, 37.
[23] Ibid., 1938, **88**, 38.
[24] *Nature*, 1938, **142**, 36.
[25] *J. Amer. chem. Soc.*, 1938, **60**, 700.
[26] *Acta. Obstet. Gynecol. scand.*, 1933, **13**, 219.
[27] *Klin. Wschr.*, 1936, **15**, 1883.
[28] *British Medical Journal*, 1937, **2**, 1218.
[29] *Ann. Rep. Med. Off. Health, Stockton-on-Tees*, 1935, 50.
[30] *Canad. med. Ass. J.*, 1936, **34**, 134.
[31] *Amer. J. Obstet. Gynec.*, 1936, **31**, 252.
[32] *J. Obstet. Gynaec. Brit. Emp.*, 1935, **42**, 1071.
[33] Ibid., 1935, **42**, 1085.
[34] Ibid., 1936, **43**, 74.
[35] *Amer. J. Obstet. Gynec.*, 1937, **33**, 429.

RADIOTHERAPY OF CARCINOMA OF THE CERVIX

The second Annual Report on the results of radiotherapy in cancer of the uterine cervix has just been issued by the Health Organization of the League of Nations under the editorship of Professor Heyman. As the first report[1] dealt with the results obtained in cases treated in 1930, so this report is concerned with treatments carried out in 1931. Three additional contributors are announced since the publication of the first report: Dr. Laborde of the Institut du Cancer, Paris; Dr. Healy of the Memorial Hospital, New York; and Dr. Ward of the Women's Hospital in the State of New York. During the past year the committee has devoted its attention mainly to the means of securing greater uniformity in the allocation of cervical cancers to their respective grades and to simplification and explanation of the system of grading. In order to facilitate the preparation of these records there has been published since the issue of the first report an atlas,[2] prepared by Dr. Heyman in collaboration with Dr. Strandquist, the latter of whom has furnished a series of excellent practical diagrams which cannot fail to be of service in classifying the different cases. This volume also embodies some modifications in the various definitions and explains certain difficulties which may arise in classification. No attention has been given to the varying methods of radiotherapeutic technique used at the different clinics as it is not yet considered practicable to assign differences in "cure rates" to variations in procedure, and the committee feels that it would be inadvisable to attempt any such differentiation at present. The reason for this is the existence of other variable circumstances which may affect survival rates quite apart from considerations of the different methods of treatment employed. The elimination of these variables is the primary object of the committee at the present time. The main body of the report consists of statistical tables giving the results obtained at the collaborating institutions, arranged upon a uniform and standardized plan. The value of early diagnosis and treatment is again demonstrated, but unfortunately the tendency to delay in seeking advice and treatment at the earliest possible moment is only

[1] Reviewed in the *British Medical Journal*, 1937, **2**, 755.
[2] Reviewed in the *British Medical Journal*, 1938, **1**, 1064.

too manifest. Of 5,672* patients treated, 1,491 were alive and free from recurrence five years after treatment, while 3,901 died of cancer. The reasons for this heavy mortality are abundantly clear from the following table:

Results of Treatment Calculated for Each of the Four Stages

	Number of Patients Treated	Alive Without Recurrence	Relative Cure
Stage I	607	335	55.2%
Stage II	1,626	590	36.8%
Stage III	2,417	512	21.2%
Stage IV	1,020	54	5.3%
Unclassified	2	0	0.0%
Totals	5,672	1,491	26.3%

Only about 10 per cent. of the patients presented themselves for treatment in the earliest stage, while over 89 per cent. were in later and less curable grades. To a large extent this is undoubtedly due to reluctance on the part of the patient to submit to proper examination and to fear as to its diagnostic results. Again, there is the optimistic note of the earliest symptoms "not being of much consequence," coupled with the hope—one might almost say expectation—that the trouble will right itself soon. So much must be admitted; but the fault is not always on the patient's side. Frequently patients present themselves at the clinic, having been under "treatment" for some considerable time, but no examination has been made. The fact is that as cancer is a very common disease routine and systematic instruction in early signs and symptoms should form part of the education of every medical student. Without this it is impossible for any real progress to be achieved, and it is gratifying to note that in New York systematic courses of instruction in neoplastic diseases form an integral part of the curriculum in certain of the university courses. The work of the American College of Surgeons in furthering the provision of such educational facilities is an enormous step forward, and we should like to see systematic instruction in these diseases placed in a similar position to instruction in infectious diseases by compulsory attendance at special cancer institutes in this country.

* This includes *all* cases reported to the committee, including some treated as long ago as 1914.

ACUTE LARYNGOTRACHEOBRONCHITIS

Under this heading J. Brennemann and colleagues[1] in Chicago have recently discussed a comparatively rare but terrifying malady in young children. The onset may be sudden or may appear to follow an ordinary upper respiratory tract infection. The child is usually in the first two years of life, and by the time medical aid is sought the picture is that of a severe infection of the respiratory tract with laryngeal and obstructive symptoms as outstanding features. The child looks toxic and tired, the temperature is between 102° and 104° F., and the respirations are rapid and laboured; there is inspiratory stridor and hoarseness, with deep retraction of the suprasternal notch, of the supraclavicular spaces, of the substernal region and, in infants, even of the sides of the thorax. An inflamed throat is found on examination; auscultation of the chest reveals a short inspiratory stridor and nearly always an expiratory wheeze, together with coarse rales all over the chest. Areas of collapse of the lung appear with startling rapidity, and in fatal cases bronchopneumonia commonly ends the picture. Indeed the clinical description would almost fit the suffocating type of bronchopneumonia with evidence of bronchial spasm that is occasionally seen. The evidence of bronchoscopy, however, and the favourable outcome in energetically treated cases indicate that the lung parenchyma is not involved. The idea of bronchoscopy in small children with such an intense inflammation of the respiratory passages may appear revolutionary; but, as Brennemann points out, before the use of this method of treatment the results were unsatisfactory. When he and his co-workers "let Nature take her course aided only by steam inhalations and our prayers" the mortality was in the region of 50 per cent. The later results with co-operative team-work involving the services of a bronchoscopist reduced this to 25 per cent. The bronchoscopic picture is that of an intense inflammation of the mucosal lining, with thickening of the membrane and obstruction of the airway in the larynx and in the smaller bronchi. Associated with this is the formation of large quantities of thick, tenacious secretion, frequently becoming dry, adherent, crust-like, and causing obstruction of the airways, including the bronchi. The treatment now adopted is to admit the child at once to a room at 75° F. saturated with vapour. In all serious cases direct laryngoscopic and bronchoscopic examination and bronchoscopic aspiration are carried out. These procedures exclude the possibility of laryngeal or tracheal diphtheria and give immediate relief. If the severity of the condition warrants it a low tracheotomy is done at once with the bronchoscope in position. The child is then disturbed as little as possible and abundance of fluid administered—by mouth, if possible, or by other routes. Any return of the obstructive symptoms calls for prompt expiration through the tracheotomy tube by means of a catheter and a suction pump. Blockage of a bronchus may be indicated by sudden changes in the child's condition and especially by displacement of the heart, and calls for further bronchoscopic aspiration. Drugs appear to play no part in the treatment of the condition, exception being made in favour of sulphanilamide if cultures of aspirated material show the haemolytic streptococcus. The course of the illness is many days or even weeks, marked by exacerbations and set-backs occasioned by the recurrence of obstruction of a serious degree. Gradually the exudate becomes more liquid and the difficult phase of getting rid of the tracheotomy tube has then to be faced. Tabulated reports from other centres show that the pre-bronchoscopic mortality of 50 per cent. is general, and the measures successfully adopted to halve this in Chicago will be studied with interest by paediatricians and oto-laryngologists.

[1] *Amer. J. Dis. Child.*, 1938, **55**, 667.

SURGICAL PROCEDURES IN GENERAL PRACTICE

This is one of a series of articles contributed by invitation

FRACTURE OF THE CARPAL SCAPHOID

BY

H. A. BRITTAIN, M.Ch., F.R.C.S.

Fracture of the scaphoid bone is by far the most common injury of the carpal bones and is also easily the most neglected fracture in the body. It is caused by a fall

FIG. 1.

FIG. 2.

FIG. 1.—Antero-posterior view: Scaphoid appears intact.
FIG. 2.—Oblique view: Line of fracture of scaphoid evident.

on the outstretched hand and is sometimes associated with a Colles's fracture. Fractures of the scaphoid bone are classified into three groups: (1) fractures of the waist; (2) fractures of the tuberosity; (3) polar fractures—these are chip fractures of either extremity.

The clinical signs are: tenderness over the scaphoid

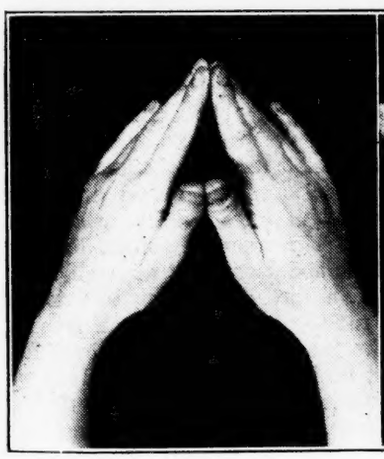


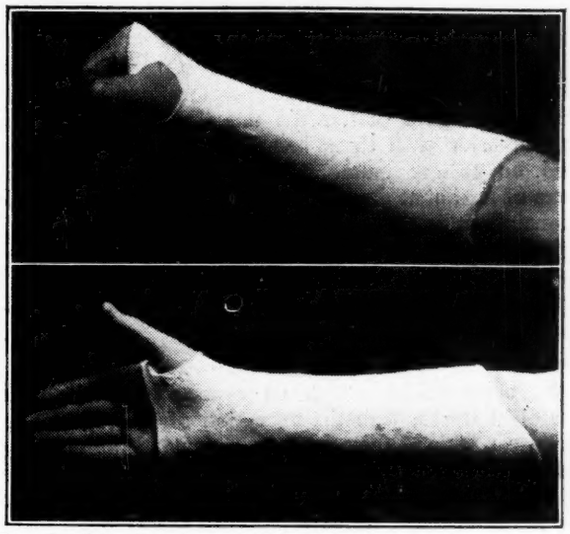
FIG. 3.

FIG. 4.

FIG. 3.—Position of hands for taking oblique *x*-ray photograph of the wrist.
FIG. 4.—Position of hands for taking antero-posterior *x*-ray photograph of the wrist.

bone, particularly in the anatomical snuff-box, which may be obliterated by swelling or deformity; limitation of the movements of the wrist-joint, particularly of dorsiflexion; and weakness of the grip.

X-ray photographs should be taken in three planes. In the antero-posterior view the long axis of the bone is directed towards the plate, and as a result the fracture may not be shown. An oblique view of the wrist will reveal the fracture (Figs. 1 and 2), as here the plate is held parallel to the long axis of the bone. It will be seen, therefore, how important it is to take an *x*-ray photograph of the oblique view as well as of the antero-posterior and lateral views as a routine in all injuries of the wrist-joint (Figs. 3 and 4). It is sometimes difficult



FIGS. 5 and 6.—Showing complete plaster for fracture of scaphoid.

to detect a recent fracture in an *x*-ray film, but the crack becomes more obvious after the first three weeks.

Differential Diagnosis

A simple sprain of the wrist may simulate a fractured scaphoid. It consists of tearing of the ligaments of the wrist-joint, generally the dorsal ligaments. There is usually an effusion into the joint and limitation of movements, but tenderness is not limited to the scaphoid, and the *x*-ray photographs are negative.

Treatment of Recent Fractures

This consists of immobilization of the wrist in plaster-of-Paris in a position of slight dorsiflexion and ulnar adduction until union has taken place. There is rarely displacement unless there has been a dislocation of the wrist-joint or of other carpal bones, so that reduction is usually unnecessary.

Two forms of splintage may be used. They are: the dorsal strip; the complete plaster (Figs. 5 and 6).

THE DORSAL STRIP

This consists of from twelve to sixteen layers of plaster-of-Paris bandage from five to six inches wide. It is first made on a table with a wet plaster bandage and is applied over a layer of stockinet, a small aperture being cut in the latter for the thumb. It should extend from the heads of the metacarpals to the elbow-joint, but should be trimmed so that its upper extremity does not impinge

against the biceps tendon when the elbow is flexed. The strip is bandaged on smoothly with a wet lint or domette bandage three inches wide. After the plaster has set the bandage may be removed and a dry one substituted, but this is not essential. The ends of the plaster are smoothed down by turning back the stockinet. The hand is secured to the plaster by three strips of strapping, half an inch wide by eight inches long, which pass from the strip over the dorsum of the wrist across the palm of the hand and back again to the strip. These can be reinforced by further pieces of strapping if considered necessary.

THE COMPLETE PLASTER

Unless constant supervision is available this is to be preferred to the dorsal strip. If the strapping is not frequently readjusted it will tend to slip, with resultant inadequate immobilization and possibly non-union. To make the complete plaster the dorsal strip is reinforced by an anterior strip three inches in width which is extended on to the palm. The palmar limit allows 90 degrees of flexion at the metacarpo-phalangeal joints. The proximal limit is the same as for the dorsal strip. It is maintained in position by a carefully applied circular plaster-of-Paris bandage. A bandage one inch in width is applied around the palm between the thumb and the index finger.

BONY UNION

Firm bony union cannot be expected to take place under eight weeks, with the exception of fractures of the tuberosity, which, being extra-articular, unite more rapidly. At the end of this time the plaster is removed and the wrist radiographed. If union has taken place bony trabeculae will be seen growing across the fracture line. It may be necessary to use a lens to determine this with certainty. A clinical sign that union has taken place is the return of strength of the grip. Before union has occurred firm approximation of the tip of the index finger to the thumb will cause pain even when the plaster is applied. This pain disappears after union. If this sign is present at the end of two months it is wise to maintain the plaster for another month. If after removal of the plaster both the clinical and *x*-ray signs indicate that the fracture has not united the plaster should be reapplied for another two months. If union has not taken place in six months operative procedures such as bone-drilling or bone-grafting should be considered. From the beginning of treatment active movements of the fingers must be encouraged and, if necessary, supervised by a massage department. The patient should also be encouraged to carry out his work as far as possible. The function of massage in all injuries of the wrist-joint is to preserve the mobility of the fingers, elbow, and shoulder. Full flexion at the metacarpo-phalangeal joints is 90 degrees, at the proximal interphalangeal joints 80 degrees, and at the distal interphalangeal joints 100 degrees. Massage of the wrist-joint itself will rarely be essential, but should be given when progress is slow.

Manipulation.—After the immobilization necessary to get union, particularly if it has been necessary to maintain the plaster cast longer than usual, the wrist may be left stiffer than normal, with restriction of movement and consequent pain. Usually time and active movements suffice to mobilize the joint. Manipulation should not be attempted while improvement is occurring, but it should be considered when the joint has limitation of movement and is painful three months after the plaster has been removed and the radiograph is normal. It can be performed under nitrous-oxide anaesthesia and consists in putting the joint through a complete range of movement, at the same time exerting traction. The hand should also be rocked laterally and antero-posteriorly on the radius and ulna. Further treatment consists of heat, massage, and active movements.

Treatment of Sprain of the Wrist-joint

The wrist should be immobilized by a dorsal strip for from one to three weeks, followed by physical treatment. If symptoms persist another *x*-ray photograph should be taken to make certain that a fracture of the scaphoid is not present.

Old Fractures of the Scaphoid

Non-union is due to inadequate immobilization. In any event union of the fractured scaphoid is slow because the bone is mainly intra-articular and its blood supply is poor. In fractures of the waist the vessels have to grow from the distal into the proximal fragment. Established non-union is diagnosed clinically by weakness of the grip and pain over the scaphoid, and radiologically by widening of the fracture-line, even to cavity formation. There is a marked discrepancy in the texture of the fragments, the proximal fragment becoming much denser.

Treatment of Non-union

PLASTER IMMOBILIZATION

In a case of established non-union without arthritis it will be necessary to maintain the plaster cast for from three to six months, or even longer. If at the end of six months there is no change in the clinical condition or *x*-ray appearance operative treatment may be undertaken.

OPERATIVE TREATMENT

1. *Drilling of the Fragments.*—Under complete aseptic conditions an incision half an inch long is made over the scaphoid parallel to the tendon of the extensor pollicis longus. The wrist is placed in ulnar adduction and the distal fragment exposed. Two drill-holes are made through the bone, starting from the radial aspect of the distal fragment and drilling through the fracture into the proximal fragment. The direction and depth of the drill is determined by the fluoroscope. After-treatment consists of immobilization in plaster as before.

2. *Bone-grafting.*—This is more certain than either of the other two methods, and may be used if these fail or if for economic reasons the patient wishes to obtain union in the shortest possible time. A curved incision three inches long is made over the dorsal and radial aspect of the scaphoid, with its concavity towards the ulnar side of the hand. The extensor pollicis longus is retracted medially and the abductor pollicis laterally. The fracture is exposed and a three-eighth-inch electric drill is introduced into the radial aspect of the distal fragment and passed through the fracture into the proximal fragment. The wrist must be in ulnar adduction. It is wise at this stage to take an *x*-ray photograph with the drill in position. A bone-graft, three eighths of an inch wide and the necessary length as determined by the *x*-ray photograph, is cut either from the tibia or the lower third of the ulna and inserted, care being taken to see that it does not project from the distal fragment. Union should take place in from three to four months.

Non-union with Arthritis

Non-union will inevitably lead to arthritis of the wrist-joint, chiefly between the radius and the proximal fragment of the scaphoid. This causes gradually increasing pain and disability.

Palliative Treatment.—A light celluloid splint, similar to the dorsal plaster strip, may be worn. It should be made from a cast by a surgical instrument maker, and in limiting the movements of the wrist it will give considerable relief.

Operative Treatment.—Removal of the scaphoid bone alone gives a poor result, as the hand tends to go into radial adduction, with consequent stiffness and weakness of the grip. If the scaphoid is to be removed, it is better to remove the whole proximal row of the carpus. This results in a wrist and hand weaker than normal, but comparatively painless.

Arthrodesis of the Wrist

This is carried out by means of a large bone-graft extending from the radius to the base of the third metacarpal. Union takes place in four months and results in a strong painless hand, but, of course, with a stiff wrist. This is probably the treatment of choice in a comparatively young and active patient with arthritis as a result of non-union of the scaphoid.

CHILDREN WITH DEFECTIVE HEARING

REPORT OF COMMITTEE OF INQUIRY

The publication of the Report[1] of the Committee of Inquiry into Problems relating to Children with Defective Hearing brings to an end a task of great complexity and difficulty extending over a period of four years. The terms of reference assigned to the Committee—"To inquire into and report upon the medical, educational, and social aspects of the problems attending children suffering from defects of hearing not amounting to total deafness"—indicate the wide field the committee had to cover.

Classification by Grades

The first step undertaken was the classification of children with defective hearing. It was considered best that this should be done on an educational basis rather than on grounds of hearing loss or other factors. The Committee showed great wisdom in eliminating the familiar but vague and almost meaningless terminology used hitherto. Indefinite terms, such as "hard of hearing," "partially deaf," "semi-mute," "semi-deaf," and so on, have always meant one thing to one observer and something different to another, and were bound to give rise to confusion. In place of these terms a system of "grading" is recommended in which all children suffering from hearing defects fall within Grades I, II, or III; Grade II is also subdivided into Grades IIA and IIB. Each grade defines the type of child suitable to come within its embrace. It provides a standard for hearing and understanding the conversational voice, and for the range of hearing as tested by both the gramophone and pure tone audiometers. Other qualifications are given, and an estimate of the number per thousand children in average attendance at elementary schools has been made for each grade. This is a scientific classification permitting no misunderstanding and should be welcomed by all.

Problems of Causation

The second chapter of the report deals with the causation, prevention, and treatment of defective hearing. The various diseases which cause defective hearing, most of them in varying degree infectious, are set out. Tables are given showing the relative numerical importance of these conditions in the production of the defect. Table III (p. 8), for example, shows the greatly reduced incidence of congenital syphilis as a cause of acquired defective hearing. In 1919 congenital syphilis was responsible for 9.2 per cent. of the total acquired cases among the school children of London, as compared with 1.5 per cent. in 1936.

The importance of suppurative otitis media as a cause of defects in hearing is stressed. The incidence in infants and children under 5; the incidence in children of school age; otitis media in public boarding schools; the relation between otitis media and the various infectious diseases; environmental and dietetic factors in the aetiology of otitis media; and other relevant matters are discussed. Emphasis is laid on the importance of suppurative otitis media in the early months and years of life; its incidence is greatest then and gradually diminishes as age advances. Attention is also drawn to the frequency of middle-ear catarrh as a cause of defective hearing.

Prevention and Treatment

Agencies for the prevention of defective hearing are discussed in detail and classified thus: (1) natural immunity to the diseases most usually complicated by infection of the ear; (2) artificially acquired immunity; (3) general resistance, increased by diet, good environment, fresh air, etc.; (4) limitation of infection; (5) treatment of streptococcal infections by drugs; (6) prevention of recurrence of infection of the ear; and (7) maintenance of hygienic conditions in the nasopharynx. The view is expressed that the use of sulphonamide compounds should greatly reduce the incidence of complications following throat infections (otitis media, mastoid disease, and septicaemia), especially if the treatment be administered early. Experience so far is hardly sufficient to support this view, but it seems likely that this opinion will prove correct.

In discussing the maintenance of hygienic conditions in the nasopharynx the Committee recommend that nasal hygiene and breathing exercises should be adopted in all schools. It suggests as an ideal that the first two minutes of both morning and afternoon sessions should be spent in this way. The nose should first be cleared in the correct manner—which need take no longer than about half a minute—and the remainder of the time should be spent in deep breathing *in* and *out* through the nose. This is important. In the first place it would detect at once children who have difficulty in, or are incapable of, clearing the nose or breathing properly; such children should forthwith be referred to the otologist. Secondly, the children would tend to be more alert and capable of greater mental effort with a clear nose and well-ventilated lungs. It might be mentioned, however, that no strain whatever should accompany the breathing exercises, and correct posture should be maintained.

So far as treatment is concerned, in discussing the organization of an aural scheme the need for co-operation between the school medical service and the maternity and child welfare service in the ascertainment and treatment of ear defects is emphasized, as is the need for linking up the aural scheme with arrangements for the control and treatment of infectious diseases. Various special methods of treatment are referred to, including zinc ionization for chronic otorrhoea and diastolization for certain nasal defects and their sequelae, both of which have proved of great value.

Testing Hearing

Chapter III of the report is concerned with methods of testing hearing. The Committee recommends routine group testing of all children in ordinary schools with the gramophone audiometer as being essential to any scheme for the ascertainment and treatment of children with defective hearing. The use of the pure tone audiometer, too, is recommended so that the acuity of hearing

[1] *Report of the Committee of Inquiry into Problems Relating to Children with Defective Hearing.* H.M. Stationery Office. Price 2s. 6d. net.

may be analysed to give a scientific basis for the provision of a hearing aid and for the teaching of speech to a child with defective hearing. Chapter IV deals with: (1) the influence of the degree of hearing defect on classification; (2) the influence of the development of speech; (3) the influence of the development of language; and (4) the influence of the ability to lip-read and other factors. Paying due regard to all these factors, the paramount consideration is whether the education which is provided for the grade to which he is assigned is the best one for the child.

Educational Provision

Educational provision is the subject of Chapter V and is considered in detail. One of the many problems is how and where should a Grade II child be educated to the best advantage. In the case of Grade IIA children—those children of Grade II who can make satisfactory progress in ordinary classes in ordinary schools—it is recommended that individual hearing aids should be provided for all who can benefit by their use; these children should also be taught to lip-read. Grade IIB children—those Grade II children who even with the help of favourable positions in class, individual hearing aids, or tuition in lip-reading, fail to make satisfactory progress in ordinary school classes—should be regarded as "deaf" within the meaning of Section 69 of the Education Act of 1921, and should not be left in ordinary schools. There then arises the question, What is to be done with them?

In London there are several day schools for children with defective hearing, but even here the distance some of the children have to travel is considerable, and guides are employed to accompany them. Outside London, and especially in rural districts, as a rule there is no such school for many miles, and consequently these Grade IIB children are often in an unsuitable educational environment. The Committee recommends that all such children who are within daily reach of a school for the deaf should attend as day pupils and be taught in separately organized classes for the partially deaf. Those not within daily reach of a school for the deaf should attend a residential school for the "partially deaf," one or more of which should be established. Until a sufficient number of such schools is in existence they should attend such residential deaf schools as will provide separate classes for them. The possibility of boarding out Grade IIB children near a special day school for the "deaf" with separately organized classes for "partially deaf" children should also be explored by local education authorities. This is already done in London. It is also advised that Grade I or Grade II children who win scholarships to secondary schools or technical institutes for normal children should, unless in exceptional circumstances, be allowed to take them up.

Chapter VI deals with preparation for employment, placement, and after-care. These points are gone into very thoroughly, and a series of important recommendations are made. The training and qualifications of teachers form the subject-matter of Chapter VII, and hearing aids for school children that of Chapter VIII.

Incidence of Defective Hearing

Chapter IX discusses the incidence of defective hearing in school children. Accurate information is exceedingly difficult to obtain, but by careful consideration of a summary of the data figures are arrived at which at any rate are not inconsistent with the evidence. Accordingly the Committee recommends that the following figures be used to estimate the provision that should be made for education and treatment.

Grade III.—0.7 to 1 per 1,000 children in average attendance.

Grade IIB.—0.5 per 1,000 children in average attendance.

Grade IIA.—0.5 to 2 per 1,000 children in average attendance.

Grade I.—50 to 80 per 1,000 children in average attendance.

The report ends with a summary of conclusions and recommendations covering the whole subject. This publication should prove of great value to all education authorities, and, indeed, to everyone interested in this branch of work.

TREACHER COLLINS PRIZE

Under the above title the Council of the Ophthalmological Society of the United Kingdom has instituted a prize of £100 to be awarded triennially for the best essay submitted upon a subject selected by the Council.

The prize is open to qualified medical practitioners of any nationality, but the essay must be written in the English language. The subject for the first award of the prize is "Cerebrospinal Disease and its Relation to the Optic Nerve."

The closing date for sending in essays for the first award is December 31, 1938. They should be submitted to the Honorary Secretary, Ophthalmological Society of the United Kingdom, 5, Racquet Court, Fleet Street, E.C.4, from whom also any further particulars can be obtained. No name should be upon any essay, but a distinguishing pseudonym or quotation, which should also be upon a sealed envelope containing the candidate's name and address. This envelope should accompany the essay.

Local News

ENGLAND AND WALES

Epsom College Pensions and Scholarships

A vacant "Christie" pension of £89 per annum will be filled by the Epsom College Conjoint Committee on November 16. Candidates must be duly qualified medical men of not less than 55 years of age, whose income, independently of any allowance from the Royal Medical Benevolent Fund, does not exceed £100 a year if single, and £150 if married.

The council of Epsom College will shortly award a "France" pension of £30 per annum to a medical man in reduced circumstances. The qualifications required of candidates are the same as those relating to the "Christie" pension set out above.

The council will also proceed to elect one or more St. Anne's Scholars. Candidates must be fully 9 years of age, and must be orphan daughters of medical men who have been in independent practice in England and Wales for not less than five years. The value of the scholarship is dependent upon the means of the applicant and the locality and fees of the schools selected.

Forms of application for these vacant pensions and scholarships can be obtained from the secretary of Epsom College, 49, Bedford Square, W.C.1, and must be completed and returned by October 25.

L.C.C. Nurses

The London County Council is making some alterations in the scheme of training and scales of salary for nurses in its hospital services. It is proposed that State-registered general-trained nurses desirous of undertaking training in fever, tuberculosis, or children's nursing shall be appointed for the requisite period (normally two years for children's nursing and one year for fever or tuberculosis nursing) as "staff nurse pupils" at a salary of £65 a year (the

minimum of the scale for general-trained staff nurses). Furthermore, any nurse who is State-registered in a supplementary branch of nursing should be allowed to train in one of the council's general hospitals, entering at the third-year salary rate (£45), and receiving, after the first year, for the remainder of the period of training the fourth-year rate (£50). All such general-trained staff who desire to take midwifery training, Part I, will also be appointed for the requisite period of training, normally six months as "staff nurse pupil midwives" with a salary of £50 a year, together with full residential emoluments and payment by the Council for the necessary lectures. It is also proposed that of the 2,600 positions on the fixed establishment now graded as "staff nurse," about 2,100 shall eventually be redesignated "deputy sister." The commencing pay of general-trained deputy sisters is to be fixed at £75 a year, rising after twelve months' service to £80 (the present maximum for staff nurses), with an additional £5 a year for staff nurses holding special certificates. The salary scale of deputy sisters State-registered in fever or children's nursing is to be £65-£5-£80 a year. Another proposal is that the present trial period of four months for probationer nurses should be abolished, and that their first year's service should be on probation.

Control of Puerperal Sepsis

The annual report for 1937 of Queen Charlotte's Maternity Hospital states that the great improvement in results which followed the introduction of treatment by prontosil early in 1936 has happily been maintained during the year under review. "There can be little doubt now that the whole outlook in the treatment of puerperal sepsis has changed very much for the better." It is also suggested that it may be possible to employ these new drugs, where there is special risk of infection in the confinement, for the prevention as well as the cure of sepsis. This possibility is being further investigated in the laboratory. During the year under review 441 swabs from doctors, midwives, and infected cases were submitted for examination. Suitable strains of haemolytic streptococci and the necessary serum were also sent out to laboratories in this and other countries in order to facilitate the adoption of the newer methods of differentiation. Queen Charlotte's has thus been able to assist in the establishment of a number of special investigation centres, which are essential for the ultimate control of puerperal fever throughout the country. Further research work in connexion with prontosil and allied drugs has elicited a number of new facts, but the report states that a full understanding of their mode of action has not yet been reached. The investigations of the laboratories have, however, extended the use of prontosil by hospitals and practitioners in cases of sepsis due to haemolytic streptococcal infections with satisfactory results. The report records the award of the William Julius Mickle Fellowship for 1938 to Dr. Leonard Colebrook, director of the research laboratories; and of the Nicholls Fellowship to Dr. H. Fuller, the hospital's biochemist.

The Croydon Obstetric Service

The annual report for 1936 of the Obstetric Service, Public Health Department, County Borough of Croydon, records a maternal death rate for the borough of 3.85 per thousand live births. The mortality for booked cases dealt with by the service was 1.6 per thousand. The infant death rate for the first twenty-one days of life fell from 25 per thousand live births in 1935 to 14 in 1936. An appendix to the report states that the Croydon obstetric service aims at the ideal of complete ante-natal, natal, and post-natal medical supervision under the same whole-time medical officer. The ante-natal clinics are in the charge of a lady assistant medical officer of health for obstetrics. Almoners and two health visitors also attend. Any abnormal cases are seen by the obstetrician. Patients can arrange for their confinements to take place at Mayday Hospital (the Croydon public health general hospital with forty-two maternity beds); at St. Mary's Maternity Hospital with thirty-two beds, of which thirty are retained by the borough council; or at their own homes under the care of private medical practitioners or midwives. All patients attending the ante-natal clinics are instructed to attend the post-natal clinic six weeks after delivery. This is conducted by the obstetrician, whose services are also available for consultation with practitioners in respect of patients who cannot pay the fees of a specialist. There were twenty-eight of these consultations during the year.

Cancer Research in Yorkshire

The annual report (1937–8) of the Yorkshire Council of the British Empire Cancer Campaign states that since its inception a sum of over £160,000 has been expended, a praiseworthy contribution from Yorkshire towards the solution of this problem. In the Department of Experimental Pathology and Cancer Research of the University of Leeds studies in experimental carcinogenesis have been continued, and the present findings tend to show that carcinogenic substances act not only on the epithelial cells, which ultimately supply the tumour cells, but also on the deeper tissues. It is suggested that this latter effect is of greater importance from the point of view of carcinogenesis. If this hypothesis is justified it seems possible that the ultimate neoplastic effect may be attributable to impairment of nutrition of the epithelial cells. Such a conclusion is supported by evidence, adduced in previous reports, showing that functional ischaemia of tissues is an important determining factor in the emergence of tumours. With regard to studies concerning glycolysis in muscle, it was found in the course of the previous year's work that glycolysis in muscle extracts requires, in addition to the already accepted co-enzymes (adenosine triphosphate, cozymohexase, and cozymase), another co-enzyme of so far unknown function. It has since been demonstrated that the new co-enzyme factor consists of at least two additional separate co-enzymes. The first is hexose diphosphate; the mode of action of the second has not yet been proved, though it appears probable that a hitherto undescribed co-enzyme functions in the conversion of 3-phosphoglyceric acid to 2-phosphoglyceric acid. Experiments are being continued with the object of confirming this point and elucidating the chemical nature of the co-enzyme.

Food Investigation

The Food Investigation Board has just issued its report for 1937. The Board asked the Medical Research Council a question which is constantly arising: Is food stored by modern methods as nutritious as fresh food? In a considered reply the Council concludes by saying, "The available evidence therefore suggests that modern methods of storing foods cause little depreciation in their nutritive value; in fact, it may be said that food of good initial quality that has been stored by the best modern methods is likely to be superior in many respects to similar food that, though still technically fresh, is in reality stale. One substance of important biological significance especially associated with fresh fruit and vegetables—namely, vitamin C or ascorbic acid—is well known to be easily destroyed by heat applied either in ordinary cooking or canning; to a less extent vitamin B_1 is liable to be similarly affected." The past year has been one of great activity on the part of the Board, and some of its findings are of more than usual interest. The development of rancidity in the fat of herrings during cold storage has been found to be due to certain enzymes, and experimental evidence suggests that these are made more active by common salt. For this reason herrings that have been frozen in brine need careful washing and glazing before they are stored, and there would be a clear advantage if freezing could be carried out satis-

factorily in air, so that contact with brine would be avoided. This possibility is being explored. In the case of several varieties of white fish, however, freezing in brine at a temperature of. – 4° F. and storage in the same way at – 22° F. will retain the original freshness for up to six months; lemon soles were still "in a highly palatable condition" after storage in brine at this temperature for two years. Work on the "gas-storage" of various fruits and on methods for the artificial ripening of imported plums and pears has continued. It has been found that in an atmosphere of 10 per cent. of carbon dioxide, 10 per cent. of oxygen, and 80 per cent. of nitrogen the growth of fungal rots on strawberries seems to be retarded. The degree of saturation of the fat of the large white pig has been shown to vary greatly and to be influenced by the rate at which the fat is deposited. Pigs on an unrestricted diet have a more saturated fat than their litter-brothers on a restricted diet, and hogs (castrated males) have a more saturated fat than gilts (virgin females). The untreated shells of good quality eggs are remarkably resistant to invasion by species of Proteus or of Pseudomonas; washing, however, renders the shell susceptible to invasion. Other matters which are dealt with in the report are the preservation of peas and asparagus by freezing, the effect of various methods of manuring, the changes of sugar content in potatoes, the period of curing needed to give a satisfactory colour to bacon, and the storage of hothouse grapes, broccoli, and apples. The report may be obtained from H.M. Stationery Office, price 4s. net.

SCOTLAND

Dundee Royal Infirmary's Needs

Speaking at the annual meeting of Dundee Royal Infirmary, Mr. Lewis F. Robertson, chairman of directors, who presided, said that the position of the institution was very disquieting, and the present state of affairs could not continue. There must be either a substantial increase of revenue or a curtailment of the services provided. The ordinary income had amounted to £48,345 and the expenditure to £56,300, so that with extraordinary expenditure there was a deficit of £8,408. For many years it had been necessary to write off deficits by taking from the reserve fund, but at the end of 1937 the sum at credit of reserve amounting to £8,377 had been insufficient to meet these deficits. The year 1938, therefore, started with a debit balance of £1,474. More revenue might be obtained from some of the country districts for which the Infirmary provided a constant and much-used service, and an organizing collector would be appointed.

Tuberculosis Trust

The fiftieth anniversary of the beginning of the anti-tuberculosis work undertaken by the Royal Victoria Hospital Tuberculosis Trust is recorded in the annual report of this Trust for the year to June 30, 1937. The establishment of the tuberculosis dispensary at 13, Bank Street, Edinburgh, on November 22, 1887, gave a new direction to the treatment of tuberculosis, shifting it from the care of the advanced case to the search for, and care of, early cases of tuberculous infection. The dispensary was devised to serve as the centre of all other anti-tuberculosis activities. This was accomplished by an accurate system of examination and records followed up by home visitation by a doctor and a staff of specially trained nurses, the dispensary also acting as a clearing house where patients were sorted out for home or sanatorium treatment. A study of the first 1,000 cases indicated the desirability of the notification of tuberculosis to the public authorities. Fourteen years later the second dispensary was established in France, and gradually there was a growing realization of the significance of the Edinburgh scheme from which grew the official plan for control of tuberculosis in Great Britain adopted in 1913. It was also the foundation upon which anti-tuberculosis work in the United States was built up. In 1887 tuberculosis was the chief cause of death throughout the Western civilized world, but to-day the mortality from tuberculosis in Great Britain has been reduced to 28 per cent., and in America to 22 per cent., of that prevailing in 1887. The Trust now manages Southfield Sanatorium Colony in connexion with the Royal Victoria Dispensary, and in 1921 it established at Gracemount Farm a tubercle-free herd of cattle for the provision of attested milk. A number of investigations have been carried out at the Sanatorium Colony, including improved methods for the isolation of the tubercle bacillus from sputum, observations on the seasonal variations in tuberculosis, experimental work on the channels of infection, and the standardization of tuberculin. Two nurse commissioners have been supported for work in the north of Scotland by the Tuberculosis Trust in collaboration with the British Red Cross Society and other bodies, and it has been found that the diminution of the death rate from tuberculosis during the past ten years has been specially noticeable in the five counties covered by the work of these nurses.

Scottish Mental Hospitals Pathological Board

The annual report for 1937 of the Scottish Mental Hospitals Pathological Board states that the demonstrations provided during the year were well attended by medical officers of contributing hospitals. Dr. A. C. P. Campbell, successor to Dr. (now Professor) J. A. Biggart as the Board's pathologist, was granted leave of absence in America for a short period. There he visited laboratories in various centres, and attended the symposium on the cerebral circulation held by the American Association for Research in Nervous and Mental Disease. With regard to research, the following studies are now in progress: the experimental production of spasm of the cerebral vessels; an embryological study of the development of the cerebral capillaries; an experimental study of the quantitative variation of the cerebral capillary bed under different conditions; a review of a series of cases of Wernicke's encephalopathy; and the experimental production of hypo- and hyperthermia by hypothalamic lesions. The report records a further considerable increase in the number of teaching specimens, both macroscopic and histological, now available, and in the collection of lantern slides at the museum. Much of the histological material filed during the year is stated to be of great teaching value.

INDIA

Bengal Housing Conditions

Attention is drawn to the backward state of town planning and housing conditions in Bengal by Lieutenant-Colonel A. C. Chatterji, I.M.S., in his report as director of public health in Bengal. He mentions first that in 1936 a lower birth rate was recorded than in all other Provinces excepting the North-West Frontier, Assam, and Sind, while the death rate was higher in Bengal than in all other Provinces except Bombay, the Central Provinces, and Orissa. The rate of natural increase was nine per thousand of population as compared with ten in 1935. Seven districts showed improvement and fourteen showed retrogression in their decadent areas during 1936, while in Howrah the position remained unaltered. In five districts no decadent area was notified. Colonel Chatterji remarks that in urban areas, excepting Calcutta proper, buildings have been arising in a haphazard manner without any kind of systematic planning, while even in Calcutta the outskirts are full of very insanitary overcrowded dwellings. Of 118 municipalities,

excluding Calcutta, only seventeen have framed by-laws and promulgated them. The urban areas are becoming very congested, especially those in process of industrialization, and there are large numbers of houses with no adequate ventilation, damp proofing, outlet for kitchen smoke, and suitable drainage. All these adverse conditions react unfavourably upon the health of the inhabitants, more so upon the pregnant mothers and the infants. This is further very seriously aggravated by the overcrowding in the individual houses, partly due to the low standard of living and partly to the lack of suitable accommodation. Not only do two or three families live in houses which are only adequate for single families, but two or three generations inhabit the same room, creating most unhealthy conditions. In the rural areas where more than forty-seven million people live, the absence of a Village Planning Act and the lack of desire and initiative on the part of the population itself have resulted in the haphazard growth of homesteads with innumerable breeding-places for mosquitos caused by excavating the ground indiscriminately all over the villages in order to obtain earth for building the huts. Each year about half a million deaths occur from malaria alone; tuberculosis is probably also increasing, especially in these malaria-infested areas. Even in the urban areas three million inhabitants live in such different types of buildings as those constructed entirely of bricks; partly of bricks and partly of corrugated sheets or tiles; entirely of corrugated sheets; daub and wattle; mud walls with thatched roofing; and bamboo walls with thatched roofing. It is therefore suggested that all the municipalities should adopt suitable by-laws, and that Village Planning and the Small Town Planning Acts should be brought into being.

The Punjab Epidemiological Bureau

Epidemiological work is prominent in the activities of the public health department of the Punjab. In his report on the public health administration Lieutenant-Colonel C. M. Nicol, I.M.S., records that five malaria surveys were undertaken in 1936 in different parts of the Province, and that these gave valuable information which could be utilized in organizing preventive measures. This work requires very specialized knowledge, and the accuracy of the observations is an important factor in the degree of success obtained by efforts directed against the development and spreading of malaria in the regions surveyed. The collection of data for the preparation of the annual malaria forecast, and the analysis of these data, is an essential piece of work which devolves upon the Bureau personnel each year. In this connexion the results of spleen examination in school children throughout the Province are examined, resulting in the compiling of valuable evidence about endemicity. The examination of blood films for the presence of the malaria parasite is a routine procedure. Advice is also given by the Bureau in respect of sites for proposed new buildings and institutions, particularly as regards the possibility of mosquito breeding in the neighbourhoods. In connexion with the Provincial hookworm survey material is systematically examined for signs of hookworm infection, —no fewer that 7,789 specimens were scrutinized during the year under review. The epidemiologist is responsible for the planning of field work for the Provincial survey and for the co-ordination of this work with laboratory investigations. Outbreaks of epidemic and other disease are investigated, and the necessary laboratory procedures are undertaken. Since 1932 much work has been done in connexion with the continued prevalence of cerebrospinal fever in the Borstal Jail at Lahore, particularly with a view to segregating carriers. An outbreak of suspected pneumonic plague was investigated. It is noteworthy that plague, which has been absent from the Shiapur district for seven years, reappeared in 1935—an indication that no false sense of security should be allowed to develop merely because this disease has not appeared for even a comparatively lengthy period of years. In 1936 there was a fall in the incidence of plague in the Punjab, the three largest towns, Lahore, Amritsar, and Multan, being entirely free; that no marked degree of success attended the campaign against cerebrospinal fever was attributed to the wide distribution of carriers and the impossibility of determining which of them were capable of transmitting the infection. A special pamphlet on food was prepared in 1936, and there was a new set of magic lantern slides on tuberculosis. This disease continues to lurk unestimated, since notification is far from complete, and only mortality figures are obtainable on a large scale in the Province generally. Colonel Nicol remarks that there is great need for the extension of the campaign against this disease, the most hopeful line of attack being the multiplication of tuberculosis clinics. A leprosy survey was begun in 1931, and up to December, 1936, 5,574 villages, with a gross population of 1,719,960, had been examined; in 744 of these villages 1,814 cases of leprosy were found. At the end of the year there were eighty leprosy clinics, serving both as treatment centres and as centres of propaganda work. Since 1927 the birth rate per thousand has risen from 42.3 to 46.9, while the death rate has fallen from 167.5 to 158.4; thus the greater the success of the public health department the greater is likely to be the pressure of the population on the land. This will have to be countered by a steady improvement of agricultural methods such as will increase the output of the land. Some relief will be afforded by an extension of irrigation, though the field remaining for this is not large, and "the ultimate problem remains that of devising some means of birth control."

Correspondence

Hepatitis after Prophylactic Serum

SIR,—A recent outbreak of poliomyelitis has aroused controversy as to the value of convalescent serum. In the *Journal* of September 10 (p. 588) Mr. G. R. Girdlestone advocates its use, and regrets the statement of Drs. Donald Paterson and MacDonald Critchley in the *Times* of August 8 that the disease does not yield to any known treatment applied within the first few days of onset.

It is not my object in this letter to discuss the efficacy of convalescent serum treatment for poliomyelitis, but rather to draw attention to dangers incurred in its use. These dangers appear to me to apply equally to the use of convalescent serum for the treatment of any virus disease.

Poliomyelitis has recently been epidemic in this area (North-East Essex), but I have not used serum treatment for the cases under my care because I have seen alarming, and in some cases fatal, results apparently follow the administration of measles convalescent serum; and I have felt that similar results might well follow the use of serum in poliomyelitis, particularly if given, as suggested by Mr. Girdlestone, without antiseptic preservation. That evil effects may follow the use of convalescent serum is a statement of sufficiently wide implication to require very full evidence before it is accepted, but I consider that the facts which I have observed merit a preliminary communication. Full particulars of the cases will be published shortly.

On June 1, 1937, seven children housed in one block of a large institution for mental defectives were inoculated with convalescent measles serum to protect them from the disease with which they had recently been in contact. Each child received 4.5 c.cm. of the serum, which came from the same batch and which was obtained from a well-known reputable firm.

After an interval varying between seventy-eight and eighty-three days these seven children developed jaundice and became gravely ill. No other child in the institution at that time had jaundice. The disease in its early stages or in its milder forms appeared to be indistinguishable from common infective hepatitis (infectious catarrhal jaundice), but of the seven cases three developed rapidly increasing signs of liver failure terminating in death. Material derived from post-mortem examination of the fatal cases showed a condition of acute atrophy of the liver. (Photomicrographs of sections of the liver in two of the cases are enclosed.)

Two months after the onset of the jaundice in the seven children who had been inoculated with convalescent measles serum two other children who had been in contact with the cases, but who had not been inoculated with serum, became ill with jaundice. Their illness did not appear to differ in any respect from common infective hepatitis.

The majority of the cases were fully investigated. Van den Bergh's test gave a biphasic or direct positive reaction. Blood culture was negative (three cases), and so also was Widal's agglutination reaction (three cases). Examinations of blood, urine, and post-mortem material for the spirochaetes of Weil's disease were negative. Blood counts showed a mild polymorphonuclear leucocytosis. Throat swabs were taken in four of the cases, and in all grew haemolytic streptococci on culture. Laevulose-tolerance tests were carried out on some cases, and showed evidence of impaired liver function.

The investigations did not give much clue as to the aetiology of the condition. The fact that all the original cases had had convalescent measles serum attracted our notice and was at first considered to be a remarkable coincidence, but this view was revised after reading recent articles by Findlay and MacCullum (1937, 1938) on the association of hepatitis with immunization against yellow fever. These authors noted that among 3,100 persons immunized against this disease with virus and immune serum eighty nine cases of jaundice developed. The average period between the time of inoculation and the development of hepatitis was between two and three months.

The first report of hepatitis associated with immunization against a virus disease is that of Theiler (1919), who refers to it in connexion with immunization of horses against horse sickness. Of 1,148 animals inoculated twenty-seven developed acute necrosis of the liver, in most instances after an interval of sixty-two to seventy-eight days. Among Army horses immunized against horse sickness there was a mortality of 4 to 5 per cent. in one group of 1,411 animals, and 20 per cent. in a second group of 1,154 animals. An interesting point is that seven non-immunized and apparently healthy horses died from hepatitis in the same area and during the same time as the illness occurred in the same group of 1,154 animals mentioned above.

Marsh (1937) has recorded the development of hepatitis in horses inoculated with immune serum alone or with mixtures of immune serum and virus for the treatment of equine encephalomyelitis. Of 5,933 hores treated symptoms of hepatitis followed inoculation in eighty-one cases after an interval varying between thirty-two and ninety-two days. In addition, eight horses that had not been immunized developed similar symptoms.

Findlay and MacCullum also record a communication to them by Dr. W. S. Gordon noting the occurrence of necrosis of the liver following inoculation of serum antitoxic to *Clostridium welchii*.

The possible theories explaining these recorded facts are fully discussed by Findlay and MacCullum, who summarize them as follows: (1) a hepatotoxic virus is introduced with the virus inoculum; or (2) two factors combine to induce the hepatitis—(*a*) a hepatotoxic substance present in the sera or tissue extract injected; (*b*) an infective agent which, in the case of human beings, is probably the causal agent of common infective jaundice. The last theory appears to me to be the most likely after consideration of the present cases. It would explain satisfactorily the occurrence of secondary cases of jaundice in individuals who have not been inoculated with serum.

In conclusion, it is perhaps as well to mention that such serious sequels to the use of immune sera must be rare, for I have not been able to find any other cases recorded in the literature of hepatitis associated with convalescent measles serum.—I am, etc.,

Colchester, Sept. 16. S. A. PROPERT.

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Convalescent Serum in Infantile Paralysis

SIR,—I am sorry that Dr. F. M. R. Walshe (*Journal*, September 17, p. 633) is so confirmed an unbeliever in convalescent serum. So far as the negative evidence available is conclusive it disproves the efficacy of serum *as it was prepared and used*. In some of the reported series the cases were not fully alternate or truly comparable in severity; the serum was often not from donors recently convalescent from poliomyelitis; the pre-paralytic stage was often not accurately assessed; there was often delay between the diagnosis and the administration; and doses were often small.

Furthermore, the evidence is not all negative. I mentioned Macnamara and Morgan. Jackson and Donovan, reviewing the 1936 epidemic of poliomyelitis in Manitoba (*Canad. publ. Hlth. J.*, August, 1937), give the following table.

End Results of 131 Cases with Positive Spinal Fluid Findings

Result	Serum administered within 36 hours of onset	Serum after 36 hours; or after paralysis; or not administered
	Cases	Cases
Recovered without paralysis ..	51 (92.7%)	43 (56.6%)
Recovered with residual paralysis	3 (5.5%)	28 (36.8%)
Died	1 (1.8%)	5 (6.6%)
Total	55 (100%)	76 (100%)

My plea is that convalescent serum has been condemned on insufficient evidence, and that there are grounds for an appeal and for a further trial.

I have been asked how a doctor is to recognize the pre-paralytic stage of poliomyelitis. The period of the year and the existence of a local epidemic may be suggestive. The child has, or has recently had, a brief feverish illness, commonly pharyngitis. All such patients should be taught to give their knees a "good morning" and "good night" kiss. During the fever, or associated with a secondary rise, the patient complains of stiffness in the neck or back, and when asked to carry out the morning and evening kissing of his knees cannot do so. Poliomyelitis is suspected, *the patient is not moved*, but with the least possible delay pathologist, serum, and microscope are brought to his bedside; lumbar puncture is carried out and 5 or 10 c.cm. of cerebrospinal fluid withdrawn, and the needle is left *in situ* while the fluid is examined. At this stage the characteristic "polio" finding is a raised cell count (polymorphonuclear and mononuclear) in a clear or slightly opalescent fluid, and

there is usually some increase of pressure. Should there be need to distinguish poliomyelitis from tuberculous meningitis the chlorides will be found unreduced. If the clinical and cerebrospinal fluid pictures agree about 10 or 20 c.cm. of serum at body temperature is slowly injected intrathecally, the main dose being given intramuscularly or intravenously. The dose is related to the size of the patient. In 12-year-olds I have used 50 to 100 c.cm., but I now feel that 200 c.cm., or even more if the illness is severe, may be advisable.—I am, etc.,

Oxford, Sept. 19. G. R. GIRDLESTONE.

Human Oil from the Omentum

SIR,—Mr. Cecil P. G. Wakeley's method of treating adherent scars with human oil (*Journal*, September 17, p. 618) has given such good results in his hands that it is likely to become a standard method. I am therefore alarmed at the abuse to which the omentum may be subjected as a result of this article.

At the present time our knowledge of what can be done with the omentum is scanty. I have now seen sufficient tragedies from interference with the omentum during operations for acute appendicitis, etc., to convince me that it is an organ which must be given the greatest respect. The devitalized fatty stump which must be left distal to the ligatures when it is amputated is a source of the greatest danger. It is an ideal culture medium for the bacteria which are present in many unperforated abdominal inflammations. Suppuration with abscess formation, or more generalized peritonitis, is likely to follow. If the omentum must be amputated in an operation for acute appendicitis then all the conditions which indicate drainage are produced even though the appendix has not perforated. In addition to this immediate danger to life there is the remote danger from adhesions which so frequently form about omental stumps. In making a necropsy on subjects who have had an abdominal operation I always open away from the scars and make a preliminary survey of the operation area. At present I share the dilemma of Dr. Hugh Auchincloss: Should the omentum be pulled down over the operation site because of its "policeman" role, or should it be rolled well away from the region because of its habit of forming adhesions? Careful case records will eventually solve these problems, but the omentum will always be a structure which requires the greatest care in handling.

It is difficult to believe that oil from the omentum should be any more valuable than oil from the many other fat deposits of the body which can be tapped without any risk to life or health. If, however, there is some special value in omental oil, then it seems to me that the only justifiable source of supply is the hypertrophied omentum found in hernial sacs. Because of its bulk this must frequently be amputated. The stump even here may be a source of danger. Last week I made a necropsy on the body of a middle-aged man who hanged himself about a month after such an operation for a right inguinal hernia. The operation had been technically perfect, the wound was very neat and well-healed. The omentum reached down to the pelvis, and its stump was an ugly mass of dark necrotic fat and fibrous shreds about which neighbouring structures were becoming adherent. If one of Mr. Wakeley's omental donors should hang himself during convalescence I should like to see the necropsy. I am sure Mr. Wakeley would sooner have adherent scars of the skin than the condition we would see.—I am, etc.,

G. R. OSBORN,
Derby, Sept. 17. Pathologist, Derbyshire Royal Infirmary.

A Strict Vegetarian Diet

SIR,—Sir Leonard Hill's interesting article under this title gives a single day's food consumption of a 9-year-old boy as follows: one fairly thick slice of pineapple weighing about 6 oz.; baked spinach and onion pie with a very thin crust made of wholemeal flour, cheese, and milk, about 10 oz. in all; two apples, one orange, and two small tomatoes, in all about 12 oz., including the skin of the orange; one small ice. This regimen was said by the subject's father to be typical. It was noted that the boy weighed 59 lb. and was fifty-two inches in height; a measurement of the twenty-four-hour urinary output of nitrogen gave 4.43 grammes, corresponding to 28 grammes protein consumption; a basal metabolism test showed an oxygen consumption of 215 c.cm. per minute, corresponding to 1,486 calories per day. (This was considered, due to the circumstances, to be a somewhat high figure. It may be noted that the mean value for a normal subject of age, sex, weight, and height given is found to be 1,224 calories per day, calculating from Fig. 20 and Fig. 25 of the latest edition of *Basal Metabolism in Health and Disease* by E. F. DuBois.)

To facilitate the calculation of the calorie value and protein content of the foods listed above these have been considered to be equivalent to 6 oz. pineapple, 4 oz. spinach, 4 oz. onion, 2 oz. wholemeal flour, 4 oz. apple, 4 oz. orange, 2 oz. tomato, and 2 oz. ice-cream. Taking calorie values and protein contents of these articles of diet from any standard textbook on nutrition it is found that the calorie value of the whole day's diet is about 650 and the protein content 18 grammes. These are maximal figures, obtained by assuming the fruits to contain no inedible portion and accepting the upper figure where a range is given for any item.

As the diet yields only half enough energy to maintain the basal metabolism and two-thirds of the protein necessary to account for the very small observed urinary nitrogen output, it is impossible to escape the conclusion that the regimen described to Sir Leonard was incorrectly described. The subject could not long survive upon the given quantities of the foods described, and the observation that he was in good health leads to the conclusion that he must ordinarily consume much more food than that which is claimed to be "typical of a day's diet."—I am, etc.,

Durham, N. Carolina, U.S.A., Sept. 7. W. J. DANN.

SIR,—This letter is apropos the paper on a strict vegetarian diet by Sir Leonard Hill (*Journal*, August 20, p. 417). It is very difficult to reconcile the small number of calories which this boy's diet is alleged to contain with his activities, his excellent state of health, and certain well-known facts of physiology. In the past, after subjecting all of the data of such reports to careful analysis, the verdict has invariably been "not proven," and, as I shall presently show, this appears to be the verdict in this case.

There is no doubt that our food requirements are less than the generally accepted standards indicate. From my experiences with over 6,000 diabetics I have been convinced for a number of years that our dietary standards reflect habits rather than actual caloric needs. Diabetics seem to do very well year in and year out with diets of 2,000 calories a day and less, and their occupations, in general, differ very little from those of non-diabetics. None of these diets, however, contains the small number of calories (800) reported in the above-mentioned case. That this boy's intake of food is appreciably different,

qualitatively and quantitatively, from that which it is alleged to be is suggested from the following:

The rate at which a child grows depends not only upon the protein content of the diet quantitatively (grammes per kilogramme of body weight) but also upon the character of the proteins—that is, their amino-acid content. From many experiences with juvenile diabetics our data clearly show that stunting results when vegetables account for more than 50 per cent. of the total protein content of the diet; to prevent retardation of growth at least this proportion of the total protein must be in the form of animal foods—meat, eggs, milk, etc. There are vegetable proteins which have approximately the same growth-promoting value as animal proteins (the soya bean is an example), but according to the description of the diet this boy is not receiving any of these vegetables. In isolated cases we have found it possible to prevent stunting with smaller amounts of animal protein. In such cases, however, this was accomplished only by increasing the number of grammes of protein per kilogramme of body weight. In view, therefore, of (*a*) the very small amount of protein which this boy's diet is alleged to contain, and (*b*) the excellent rate at which he is growing—according to English standards this boy is about three inches taller than the mean height for his age: see the Annual Report of the Chief Medical Officer of the Board of Education for 1927—one must conclude that the biological (growth-promoting, etc.) value of these vegetable proteins not only is as high as that of animal proteins but is actually higher. This is not in accord with their known amino-acid contents. Parenthetically it may be observed that this boy is not on "a strict vegetarian diet." There is at least a small amount of animal protein in the cheese and milk in the food at lunch and in the sour milk, and the cake allowed probably contains a little milk. The amounts are, however, too small to account for the discrepancy between the actual and theoretically expected state of the boy's nutrition.

It is still more difficult to reconcile the energy content of this boy's diet (800 calories each twenty-four hours) with his body weight and expenditure of energy, since the law of the conservation of energy holds in the human body as elsewhere. The oxygen consumption under conditions of basal metabolism was found to be 215 c.cm. per minute. This corresponds to an expenditure of approximately 1,500 calories per twenty-four hours. This is a very large expenditure of energy for a boy of his age, height, and weight under these conditions, but from the description given—excitement during the test—the conditions were probably not strictly basal. Assuming, however, a *normal* expenditure for a boy of his age, height, and weight —that is, about 1,080 calories per twenty-four hours (*Amer. J. Dis. Child.*, 1938, **55**, 455)—there is still a marked disproportion between the theoretically expected and the actual body weight. Thus, to the expenditure of energy under basal conditions—1,080 calories—it is necessary to add about fifty calories for the specific dynamic action of the food, and to this total must be added the expenditure of energy during work. Assuming that the boy does no other muscular work but walk the five miles a day as described—"to church and back"—and assuming that he walks at the very slow rate of one mile per hour only, he expends, in addition to the energy under basal conditions, approximately one calorie per kilogramme of body weight per hour, or about 135 calories per day (body weight is approximately 27 kilogrammes). The total expenditure of energy is therefore about 1,265 calories. Since his diet is alleged to yield about 800 calories only this small amount of muscular activity alone accounts for a deficit of 465 calories per twenty-four hours. In one year, therefore, this boy should *lose* about 40 lb. ($465 \times 365 \div 452 \times 9.3$). Since he weighs 59 lb., he should disappear completely in less than two years. Actually his rate of development is excellent.

The loss of weight estimated above is conservative, since, as it will be noted, it assumes (*a*) a maximum energy value for fat (9.3 calories per gramme), and (*b*) that loss of body weight is confined entirely to fat. The objection may be raised that the allowance of 135 calories for the walk of five miles is too liberal. It should be observed that, assuming the boy did nothing whatever but lie quietly in bed throughout the whole twenty-four hours of the day, and assuming that his heat production under basal metabolism conditions is 1,080 calories only, there is still a deficit of about 280 calories per day, which in one year should result in a loss of about 25 lb. —$(1080–800) \times 365 \div 9.3 \times 452$. The conclusion therefore seems to be that this boy is either eating more food than is shown in the diet or that the law of the conservation of energy does not apply to him.

We now come to the laboratory data. The statement is made that "confirmatory of his father's claim that the boy lives on a diet much like that given by his parents is the *fact* that the total nitrogen determination was 4.43 grammes in the twenty-four hours' urine. . . . The urea came out . . . a total of 9.65 grammes in twenty-four hours." With regard to the small amount of nitrogen in the urine, it is necessary to observe that the nitrogen content of a child's urine, unlike that in adults, is no indication of the total protein metabolism—the output of nitrogen rarely equals the intake—because children tend to store appreciable amounts of protein for growth. Low-calorie diets in which carbohydrates dominate also tend towards retention of nitrogen. That the nitrogen metabolism in this case requires reinvestigation is clearly shown by the following considerations:

Urea has this structure: CON_2H_4. Its molecular weight is therefore 60, and for every 60 parts of urea there are 28 parts of nitrogen. The *maximum* amount of urea which 4.43 grammes of nitrogen—the amount found in the urine—is capable of yielding is therefore 9.48 grammes only (2.14×4.43). Actually the urine is said to have contained 9.65 grammes. The difference between the theoretically possible and the actual amount of urea is admittedly small and within the limits of the experimental error of the test. It must, however, also be assumed (*a*) that this boy's urine contained no amino-acids, which normally account for 3 to 5 per cent. of the total nitrogen; (*b*) that it contained no ammonia, which also normally accounts for 3 to 5 per cent. of the total nitrogen; (*c*) that it was absolutely free of creatinine, about 37 per cent. of which is nitrogen; (*d*) that it was also free of uric acid, about 33 per cent. of which is nitrogen; and (*e*) that it was also free of the "residual" nitrogenous substances, all of which, as a rule, account for about 20 per cent. of the total nitrogen content of normal urine. No human urine has ever been found free of these nitrogenous substances. The discrepancy is still more marked when consideration is given to the fact that though urea accounts for about 80 to 90 per cent. of the total nitrogen in the urine with ordinary diets, it accounts for 60 to 70 per cent. only when the diet is low in calories and low in proteins. It is obvious therefore that an error occurred either in the determination of the total nitrogen or in the estimation of the urea.

With regard to the observation of not having "come across so low a value for protein metabolism [4.43 grammes of nitrogen] before," may I respectfully draw Sir Leonard Hill's attention to a number of reports of less than 2 grammes of nitrogen a day (*Skand. Arch. Physiol.*, 1900, **10**, 91; *Biochem. J.*, 1922, **16**, 131; and *J. Biol. Chem.*, 1924, **61**, 355; 1926, **68**, 15; 1928, **76**, 391; and 1932, **95**, 327) and one of my reports of a juvenile diabetic with less than 1 gramme per day (*New Engl. J. Med.*, 1931, **204**, 799).—I am, etc.,

I. M. RABINOWITCH.
Montreal General Hospital, Canada, Sept. 1.

Tannic Acid Dressings in Wounds of the Fingers

SIR,—In the treatment of wounds of the fingers and hands tannic acid has certain distinct advantages which do not appear to be widely realized. Cases particularly suitable for treatment with tannic acid are: (1) those in which the tip of the finger has been cut off as by a guillotine; (2) cases in which an area of skin has been

avulsed so that suture cannot be performed satisfactorily; and (3) cases in which a tendon has been exposed. If tannic acid is not used in the treatment of the first type of case, then either an amputation is performed and a flap obtained by sacrificing the greater part, if not all, of the terminal phalanx; or the wound has to be dressed repeatedly, with considerable discomfort, and slow healing and sepsis are practically inevitable. If tannic acid is used the freedom from pain is notable; there are no unpleasant dressings that stick and have to be soaked off; and healing is excellent and more rapid, no doubt because sepsis is avoided by leaving the wound, once it is dressed, undisturbed. This method does not give a soundly healed scar quite as rapidly as does a well-performed amputation, but it saves the maximum amount of the phalanx. Although the gain in time with an amputation may be a source of satisfaction to the employer, the loss of a terminal phalanx is a source of considerable grief to the employee, especially in the case of a lady.

The technique is as follows: the wound toilet is undertaken in the usual way under local anaesthesia; the part is then soaked in a 1 in 1,000 watery flavine solution for at least fifteen to twenty minutes. The part is dried and tannic acid is applied; one of the many forms of tannic acid jelly is satisfactory and convenient, but, if preferred, a tannic acid compress using up to a 40 per cent. solution can be employed. Later dressings consist merely in replacing the top wool and the bandage. The tannic acid is left until it comes off of its own accord. —I am, etc.,

London, S.W.2. W. D. PARK.

The Occipito-posterior Case

SIR,—Concerning the diagnosis of occipito-posterior positions of the vertex, the sign on which I have always placed the greatest reliance is not mentioned in Professor Chassar Moir's article (*Journal*, September 10, p. 555), nor have I ever seen it mentioned in any standard work on midwifery. The os uteri in the early stages of parturition is invariably related to the summit of the presenting part of the vertex. If in the early stages, when one finger can be admitted, the os uteri approaches the sacrum, the position is occipito-posterior. If it approaches the pubis the position is occipito-anterior. In the later stages, when the os admits three fingers, the sign does not appear to be so convincing. This observation is based on three thousand cases attended in a country district.—I am, etc.,

Beccles, September 12. H. WOOD-HILL.

SIR,—Since my former note (*Journal*, 1921, **2**, 782) there has been much discussion, but the occipito-posterior presentation remains the bugbear of domestic practice and the associated deflexion of the head is not clearly accounted for. All may agree that when the foetal-pelvic fit is easy spontaneous delivery is likely; when the fit is close the normal flexion of the foetus is likely to be lost. If the flexion persists the occiput will impinge on the pelvic slope and make the long forward rotation of 135 degrees. If deflexion occurs the sinciput will impinge on the pelvic slope and rotate forward 45 degrees. With long rotation labour at best is prolonged and exhausting; with deflexion the passage of the head round the pubic arch is difficult. In my note of 1921 two claims were made: (1) that it is in most cases possible to make the diagnosis of "impending posterior occiput"; and (2) that in many cases it is possible to avert it by manipulative methods. Each of these claims has been justified by experience, and the cases of failure show that there are factors which call for further study. In relation to the statement that when the pelvic fit is close the normal flexion of the foetal head is likely to be lost, one may point out that the head contour is truly oval—not elliptic—and that it has for space to fit into one of two ovals with its axis in the right or left oblique diameter. With the occiput posteriorly the large end of the head oval is at the narrow end of the pelvic oval. Entrance into the pelvic brim in this relation brings a deflecting pressure to bear on the occiput. May I renew my appeal to practitioners to try to diagnose "impending posterior occiput" and avert it by manipulative methods. In every case in which they succeed they will save the patient the delay of a long rotation, and perhaps the difficulties and anxieties of a face-to-pubis delivery.—I am, etc.,

Dundee, Sept. 13. R. C. BUIST, M.D.

Treatment of Malaria

SIR,—The article published under this heading in your issue of July 30 (p. 227) conveys a poor impression of the atebrin-plasmoquine treatment. The statement that "the simultaneous administration of atebrin and plasmoquine appears to aggravate the toxicity of each, and is not to be advised" is so emphatic that it might become a dogma of anti-malarial treatment. Actually, the simultaneous administration method has given me results incomparably better than those that I have received from any other form of treatment, so that I venture to suggest that the above statement deserves to be qualified.

Any drugs which undertake to eradicate malaria in a five-day course must possess a powerful toxicity: to administer such drugs in normal dosage to patients already in a toxic condition as the result of acute febrile infection is to invite trouble. These drugs should not be administered on any but a full stomach, and the acute malarial patient is seldom a hearty eater.

In this locality a majority of our cases are of subtertian infection. I treat these in the acute stages with large doses of quinine and small doses of plasmochin compound. When all symptoms have disappeared, with the patient under daily observation, and with the assurance that he or she is feeling and feeding well, I institute the atabrine-plasmochin co. treatment (one tablet of each t.d.s. p.c.). Patients are usually fit to begin the course within ten days of the onset of fever. The course may exceed the prescribed five days. I do not use plasmochin simplex. The alternative spellings of the names are, I believe, only of proprietary significance.

With the above routine, which I have practised since 1933, less than 10 per cent. of my patients have developed toxic symptoms and more than 75 per cent. have had no recurrence of malaria.—I am, etc.,

RYAN MACMAHON,
Medical Officer, Apex (Trinidad) Oilfields, Ltd.
Trinidad, August 22.

Tuberculosis Dispensaries or Chest Clinics?

SIR,—With the remarks of Dr. Philip Ellman in his letter in your issue of September 10 (p. 593) under the above heading, and with those of Dr. G. S. Todd at the Annual Meeting of the British Medical Association (Tuberculosis Section), reported in your issue of August 6 (p. 312), where they deprecate the use of the term "tuberculosis dispensary" and suggest the title "chest clinic," I am in complete agreement.

It is the common experience at these centres, as Dr. Ellman points out, that a very large percentage of patients

prove on investigation to be either free from disease or suffering from some pulmonary disease other than tuberculosis, or frequently from extrapulmonary disease. How often, for example, are bronchiectasis, intrathoracic neoplasm, and para-nasal sinus infection with its broncho-pulmonary complications or sequelae diagnosed there? A properly equipped dispensary with its facilities for clinical, bacteriological, and radiological investigation becomes, *ipso facto*, a chest clinic. For a practitioner to have to recommend his patient to a "T.B. dispensary" with a request for an opinion solely as to the presence or absence of tuberculosis of the lungs, or merely to confirm his suspicion, is not in the best interests of the practice of medicine and is not devoid of harm to the patient, who, fearing the worst, is filled with apprehension and anxiety, and through this fear may fail to take his doctor's advice and may go so far as to remove his name from the practitioner's list. If, however, a recommendation was made to have his chest, or, say the cause of his continued "cold," etc., investigated at the "chest clinic," there would be less hesitation on his part to attend.

The chest clinic, with its valuable clientele, properly equipped and staffed by the local authority concerned and having, as in my own county, an appropriate liaison with the local general hospital, could perform a useful function in the training of the medical student and future practitioner: there ample opportunities would be found of acquiring a knowledge of chest disease in general and of tuberculosis in particular, and the future doctor could come to appreciate the proper place of the chest clinic in the scheme of things, and would be only too keen to avail himself of its help in his future difficulties. Again, the chest clinic should play its part, as it does in my area, in the schemes now functioning in certain centres for postgraduate courses for general practitioners under the auspices of the Ministry of Health.

Let us drop the obsolete term "tuberculosis dispensary" and assume the more appropriate title "chest clinic." Most of our new clients do not suffer from tuberculosis, and we in charge dispense neither medicines nor cod-liver oil.—I am, etc.,

Cambridge, September 12. W. PATON PHILIP.

SIR,—Dr. Gregory Kayne and I are, I am glad to note, in substantial agreement (*Journal*, September 17, p. 634). Actually, in my original letter (September 10, p. 593) I suggested "municipal *or* chest clinic ("or" being omitted through error), but in my paper to the Tuberculosis Association at the Cambridge meeting (*Medical Officer*, 1934, **51**, 236), from which I quoted, I concluded: "The title 'tuberculosis dispensary' should be replaced by the designation 'the chest or municipal clinic,' or be constituted a special department of a general, and if possible a teaching, hospital, as already exists in a few cases."

With Dr. Kayne's condemnation of the term "tuberculosis officer" I am in complete agreement. The recognition of the systemic nature of tuberculosis and hence the need for the "tuberculosis physician" having a wide knowledge of medicine in general and diseases of the chest in particular would surely in these days be accepted by all. As Dr. Maurice Davidson so aptly points out, "the study of tuberculosis, like other specialties, suffers not a little from the evils of departmentalism." On the other hand, once a patient is definitely known to be suffering from tuberculosis his education for his "tuberculous career" must be a complete one, and I agree that there should be no subterfuge. This point, however, is outside the realm of the present discussion.—I am, etc.,

London, W.1, Sept. 16. PHILIP ELLMAN.

Fracture of the Neck of the Femur

SIR,—Such a flood of literature on this subject has been let loose in recent months that a two-years ban has been suggested. Yet I cannot resist commenting on Professor E. W. Hey Groves's (*Journal*, September 17, p. 633) claim that "from the moment that the operation begins with the insertion of the drill guide until that in which the nail is driven home and the skin incision closed need not occupy more than five minutes." This must mean that there is no radiographic confirmation of the position, or of the degree of penetration of the drill guide, for even with modern technique it takes about four minutes to expose and to develop antero-posterior and lateral radiographs. If this is what Professor Hey Groves implies, then one of the most vital steps of the operation has been omitted. If the preliminary tests are considered infallible, which I cannot for a moment accept, then why use a guide at all? In what sense is it a "guide" unless we have confirmed that it is precisely in the right place?

I am sure that I am not alone in having seen not one but many cases of nails driven into the femoral neck which have missed the head altogether and which have penetrated the front or the back, the top or the bottom, in fact anywhere except the middle. The more we encourage the belief that this is a procedure to be completed in five minutes in the patient's bedroom the more we shall see of these cases. These are the failures. The failures are not coming from surgeons who spend an extra five minutes in securing radiographic confirmation of every step. Moreover, patients do not suffer by these precautions. How does quietly standing by for a few moments while films are developed increase the shock?

There is nothing prohibitive about the extra-articular insertion of a nail under spinal or, if necessary, local anaesthesia, whether the activities in the theatre occupy five or thirty-five minutes. The "operating time," used in the strict sense of time occupied in cutting and stitching, is about the same in each case. So is the shock. Then let us insist on accuracy and forget the clock.—I am, etc.,

Liverpool, Sept. 18. R. WATSON-JONES.

Aural Vertigo

SIR,—I have read with much interest Dr. W. Russell Brain's lucid exposition of the difficult subject of vertigo in the *Journal* of September 17 (p. 605). Since he refers to some recent work of mine on aural vertigo I should be grateful for the opportunity of discussing a few of the points in his paper, as I was unfortunately unable to be in Plymouth for the Annual Meeting of the British Medical Association.

I note that Dr. Brain accepts, in the present state of our knowledge, the hypothesis that the complaint "Ménière's syndrome," or, as I have suggested, "focal labyrinthitis," is a clinical and possibly a pathological entity—that is, a toxi-infective process in the labyrinth resulting from infection usually to be found in the nose, mouth, or throat. He examples, however, two types of case which he finds difficult to fit in with this hypothesis. In the first of these there is an interval of many years between the development of a defect in hearing and the onset of vertigo, while in the second group the attacks of vertigo are spaced at intervals of many years. I agree that such cases occur, and I have several examples in my records. I feel, however, that they will be found to slip into place in the picture provided one accepts the idea that the labyrinthine lesion is a purely secondary

one, waxing or waning in accordance with the degree of toxaemia produced by the primary infection. I believe that a similar picture can be seen sometimes in the case of the secondary toxi-infective changes observed in such conditions as fibrositis, or perhaps, as presenting a closer analogy, iridocyclitis in the case of the eye. If it be accepted, as seems probable, that the secondary tissue changes are due to circulating toxins and not to the presence of micro-organisms such a state of affairs is what one would expect to accompany the accentuation or diminution of the primary infection.

I should also like to stress the observation that in the majority of cases (in my last series of seventy-four in two-thirds) the labyrinthine lesion started as an auditory defect—that is, with deafness or tinnitus—and that in this same series the average interval before the onset of vertigo was no less than 7.3 years. While this observation does not agree with Dr. Brain's statement that in such cases the interval between the auditory symptoms and the onset of vertigo is usually short ("tinnitus and deafness . . . precede vertigo by only a few months or at most a year or two . . ."), I believe that I am not mistaken but that the discrepancy is to be explained by the fact that while I, as an otologist, have inquired particularly as to the earliest onset of auditory symptoms, Dr. Brain's attention, as a neurologist, has perhaps been rather more concentrated on the vertiginous symptoms. The finding that this series of cases also provides—that the time intervals are more or less uniformly spaced over the series from the shortest to the longest—suggests that there is no fundamental distinction between them.

Finally, since the majority of cases of Ménière's syndrome start with a derangement of hearing, it is important to recognize and treat such cases in this stage before irreparable labyrinthine damage has been produced. I am endeavouring at the moment to define the clinical picture of such a type of nerve deafness, and feel that the attempt is likely to be a successful one.—I am, etc.,

Bristol, Sept. 19. A. J. WRIGHT.

Catarrhal Jaundice

SIR,—Dr. C. E. Lakin in his article on toxic and infective jaundice (*Journal*, August 27, p. 437) discusses the question whether catarrhal jaundice is obstructive or toxic, and finds the reports and observations so conflicting that he considers dividing catarrhal jaundice into two classes. In this discussion the data obtained by means of the hippuric acid test for liver function (Quick, A. J., *Amer. J. med. Sci.*, 1933, **185**, 630; and *Arch. int. Med.*, 1936, **57**, 544) are interesting and, I believe, significant. It has been consistently found that the synthesis of hippuric acid is impaired in catarrhal jaundice, and that the test becomes normal when the patient has completely recovered. Frequently a marked impairment of the liver as determined by the hippuric acid test will still be found after the jaundice has cleared, which indicates that hepatic recovery cannot be judged solely by the icterus. In toxic hepatitis the test is low, and corresponds well quantitatively with the clinical condition of the patient. From these findings it appears that in catarrhal jaundice liver injury exists.—I am, etc.,

ARMAND J. QUICK.

Marquette University Medical School, Milwaukee, Wisconsin, Sept. 10.

SIR,—From the discussion on jaundice at the Plymouth meeting, and also from the annotation in the *Journal* of September 10 (p. 581), it appears that there is still room for doubt as to whether two types of catarrhal jaundice exist, and that anyhow it is almost impossible to distinguish between them. This being so it may be worth while mentioning a clinical observation I made in a recent epidemic, which seems as if it might be of help in this connexion.

The epidemic, which began here about fifteen months ago, was of a mild type, but it must have affected a large proportion of the children in the area between the ages of 9 and 2; in fact, in one class of thirty-seven children no fewer than fifteen were absent because of it when the school opened in August. The most remarkable difference from the usual clinical description was that only once was I able to palpate the liver, and that with difficulty, while the spleen was never palpable at all. All the cases except one, while the epidemic was in full swing, were of the same type. The exception was a girl of 12 (almost the oldest child I saw with jaundice), and her condition corresponded exactly with the usual type of non-epidemic catarrhal jaundice—less acute onset, longer-lasting jaundice, and liver enlarged to three fingerbreadths below the costal margin. This case proved most instructive.

Ever since Mr. D. Ligat (*Lancet*, 1919, **1**, 729) published his account of what is now known as Ligat's reflex—the elicitation of hyperaesthesia of the abdominal wall by gentle pinching of the skin—I have been interested in the areas of hyperaesthesia discovered, and have found the sign of great practical value as well as—in measles—of some theoretical interest (*Journal*, 1935, **2**, 84). (With reference to this earlier observation of mine it may be of interest to mention that the pathology of the appendix in measles has been studied in Germany, and that at least one case is on record in America in which an appendix was removed at operation and from it the pathologist gave the correct diagnosis of measles before the rash appeared.) I naturally tested for this reflex on these cases of jaundice, as I should in any case of vomiting, and was not surprised to find it in the appendicular area of every case that had not had the appendix removed. I found also that the reflex was active on the opposite side of the mid-line, which is not unusual in cases of appendicitis. However, with numbers of cases passing through my hands, I noticed that the left-sided reflex had a most unusual and exact distribution. It began at the level of the umbilicus about half-way between the linea alba and the linea semilunaris, and it descended vertically nearly half-way to Poupart's ligament. Very seldom did it rise above the level of the umbilicus, and it was definitely a line, about ¼ to ½ inch wide, and not an oval or circular area. I have examined hundreds of abdomens both before and since, but I cannot recall ever having found a Ligat's reflex with such a distribution in any but a case of epidemic jaundice. In the case of ordinary catarrhal jaundice which I have mentioned both the appendicular and the left-sided reflex were significantly absent.

Since the epidemic died down I have had several opportunities of seeing sporadic cases of sickness, and in the few cases in which this new reflex was present jaundice was either actually present or appeared subsequently. One particularly interesting case was a child of 12 whom I saw late one night with a temperature of 102° F. and a "bilious attack." I knew she had a mild chronic appendicitis, but this time the new reflex was present also. A specimen of urine proved to contain a slight trace of bile, and next morning there was an icteric conjunctival tinge. In forty-eight hours the bile had disappeared from the urine, the reflex had gone also, and the girl was practically well again. I have seen one adult male with the typical symptoms and the two reflexes, and fourteen days after I first examined him I saw his sister, aged 26, with both reflexes present, and she also became a typical case of epidemic jaundice.

If these observations are confirmed by the experience of other investigators in other epidemics it would appear that we have here a simple clinical sign which will definitely distinguish between two types of catarrhal jaundice, indeed a sign which is probably pathognomonic for the epidemic variety. If this is so it should materially aid the investigation of the epidemiology of the disease, and

lead to distinguishing as such what might otherwise pass as more or less ordinary "bilious attacks," as in the girl I have just mentioned. I do not know what abdominal organ this very circumscribed reflex refers to, but it is clear that its presence does denote an inflammation of some organ which is a constant feature of the disease. In view of the paucity of pathological reports on epidemic jaundice this observation seems of some importance. It is impossible for one observer to be dogmatic about any point, but I think that the left-sided reflex probably develops before the appendicular one and usually disappears before it. It is seldom found for more than a week or so after the jaundice develops. In testing for this reflex I should like to stress that the greatest care and gentleness are necessary. It is easy to get a child into such a condition that no observation is possible, but patience, care, and a little skill will nearly always enable one to decide definitely on its presence or absence, and in view of the child's known vagueness as to abdominal pain it is astonishing how accurate the localization of the reflex is.—I am, etc.,

Winsford, Cheshire, Sept. 17. W. N. LEAK, M.D

The Harris Prostatectomy

SIR,—It is but natural that Messrs. Colin Edwards and Richard G. S. Harris of Sydney, New South Wales, should desire to defend the Harry Harris technique for prostatectomy, but I am not aware that Mr. Kenneth Walker has ever attacked it or my modification of it. The operation of reconstruction for the adenomatous prostate will never be successfully assailed, even by transurethral resection, until the surgeon has to exchange his scalpel for a hormone.

Mr. Kenneth Walker has pointed out that pelvic cellulitis is a complication of the Harris technique. This may occur in any case of suprapubic cystotomy, and is no more common in a prostatectomy efficiently carried out than in other bladder operations which require an exposure of the pre-vesical space.—I am, etc.,

London, W.1, Sept. 19. CLIFFORD MORSON.

Faecal Accumulation in the Rectum

SIR,—The article by Mr. Harold Dodd (*Journal*, September 17, p. 624) calls to mind the instructions I received when attending the surgical class of Mr. John Duncan in Edinburgh in the early 1880's. His suggestion for the removal of the impacted mass in the rectum was to aid the finger with "the handle of a tablespoon." On more than one occasion I have been called to attend patients suffering from "diarrhoea" when examination of the rectum has revealed a large faecal mass. The satisfaction at so ready a discovery of the cause and so obvious a method of treatment—with or without the tablespoon—remains in the memory.—I am, etc.,

W. W. SHRUBSHALL, D.P.H.

Burgess Hill, Sussex, Sept. 17.

SIR,—The article by Mr. H. Dodd in the *Journal* of September 17 (p. 624) reminded me of a case that came to my notice some years ago.

The lady in question, who proved to be a primipara, came in early pregnancy for confirmation of her condition. She appeared to be in good health, and had no complaints. On examination I found the lumen of the vagina obstructed by a large tumour-like formation, rendering passage of the examining finger impossible. The patient assured me that her bowel activity was satisfactory, and added that her motions were frequent and watery. Rectal examination revealed a firm faecal mass about the size of a foetal head. I evacuated this mass digitally, leaving the rectum apparently empty. Olive oil enemata were administered later by a nurse, who reported good results. In three days' time I again examined the rectum and found another faecal mass, as firm as the first but not so large. I evacuated this mass digitally. Oil enemata were continued, and three days later there was still in the rectum some hard residue, which I removed. The enemata were discontinued, and liquid paraffin orally was substituted. During the remainder of her pregnancy there was no recurrence of excessive faecal accumulation.

This case stressed the importance of rectal exploration not only in pregnancy but in the wider fields of medicine, as my later experience proved.—I am, etc.,

Birmingham, Sept. 17. A. W. DOCKAR.

Peritonsillar Abscess

SIR,—I wish to refer to several points raised recently regarding peritonsillar abscess (*Journal*, June 18, p. 1323; July 2, p. 41; July 16, p. 152). It hardly seems reasonable to lay down a hard-and-fast rule as to when a peritonsillar abscess should be opened, but if a patient is in acute distress a well-judged incision will give some relief at least, and probably great relief. Much pain is inflicted on patients by the use of unsuitable instruments. It is certainly injudicious to use a 10 per cent. cocaine spray, but 10 per cent. cocaine applied about the site of incision and nowhere else will be found satisfactory. After painting with cocaine an injection of 1/2 per cent. or 1 per cent. novocain with a minute amount of adrenaline—made slowly into the tissues to be incised and allowed at least five minutes in which to act—is a great boon to the patient. The injection should be made with a very sharp, fine hypodermic needle, firmly fitted on to, say, a long, thin, glass tuberculin syringe. Finally, the knife must be extremely sharp-pointed and thin—a new von Graefe's knife is perhaps best. With such a knife a well-placed incision will not give severe pain if the site of incision has been properly prepared. In competent hands it must be rare not to find pus. An ordinary scalpel seems a cruel instrument with which to open such a tender mass, but those who would enlarge an incision by stretching it with sinus forceps ought surely to have the operation done on themselves.—I am, etc.,

Brisbane, Australia, August 12. H. V. FOXTON.

Universities and Colleges

UNIVERSITY OF LONDON

WESTMINSTER HOSPITAL MEDICAL SCHOOL

The inaugural address at Westminster Hospital Medical School will be given by Dr. Robert Hutchison, President of the Royal College of Physicians of London, on Monday, October 3, at 3 p.m. The chair will be taken by Major H. M. Clowes, D.S.O.

LONDON (ROYAL FREE HOSPITAL) MEDICAL SCHOOL FOR WOMEN

The inaugural address of the London (Royal Free Hospital) School of Medicine for Women will be delivered by Lord Horder at the Royal Free Hospital, Gray's Inn Road, W.C.1, on Tuesday, October 4, at 3 p.m.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

A reception will be held at University College Hospital Medical School on Tuesday, October 4. At 3.15 p.m. Sir StClair Thomson will deliver an address on "Lister at University College and Hospital."

Obituary

THOMAS MONCK BURN-MURDOCH, M.B., C.M.ED., F.R.C.P.Ed.

Consulting Physician, Royal Edinburgh Hospital for Sick Children

We regret to announce the death on September 13, after a brief illness, of Thomas Monck Burn-Murdoch. Born in Edinburgh in 1854, the second son of John Burn-Murdoch, Advocate of Gartincaber, Doune, he was educated at Begbie's and the Collegiate Schools. He then passed to the University of Edinburgh to study medicine, where he was the pupil of Joseph Lister, then Regius Professor of Clinical Surgery: this association he often referred to with great pleasure and pride. After graduating in 1877 Dr. Burn-Murdoch was appointed house-surgeon in the Old Royal Infirmary to Patrick Heron Watson—later Sir Patrick—and subsequently held a second appointment under the same "chief" at Chalmers Hospital, where he had charge of both medical and surgical patients, an experience which proved invaluable to him in his future career as a general practitioner. In 1879 Dr. Burn-Murdoch began practice in the Morningside district of Edinburgh, but in the later years of his professional life he lived in Charlotte Square. He early gained the confidence and esteem of the public, and built up an extensive practice in the city, and his advice was also frequently sought as a consultant. As a general practitioner he possessed a sound and thorough knowledge of his profession and keen powers of observation. Many a young practitioner has owed his start in his profession and his subsequent success to his kindly help and advice.

In 1883 Dr. Burn-Murdoch became extra-physician to the Royal Edinburgh Hospital for Sick Children and physician in 1899; retiring in 1906, he thus gave twenty-three years of useful and loyal service to that institution. While on the staff of the hospital he was lecturer in the diseases of children in the University. His long association with this hospital stimulated his interest in the health and physical welfare of children, and among his other appointments he held that of physician to the Ministers' Daughters' College for twenty-four years and for twenty-eight years that of medical officer to Merchiston Castle School. His methods were far ahead of his times and achieved outstanding success. In 1898 he was a vice-president of the Section of Diseases of Children at the Annual Meeting of the British Medical Association.

On the outbreak of the war he gave up much of his time to war work. In January, 1916, unable to resist the clamant need for doctors, he offered his services to his country and was asked to organize the Smithson War Hospital at Greenock, where he held the rank of honorary major in the R.A.M.C. Later, he took command of the Springburn-Woodside Central Hospital, Glasgow, with its auxiliary establishments, and in 1918 became medical officer to Dalmeny House Hospital, in which he remained to the end of the war. If after the war he could have returned to Edinburgh as a consultant physician for children's diseases he would doubtless have fulfilled his personal desire. On the death, however, of his elder brother in October, 1914, Dr. Burn-Murdoch had inherited the family property of Gartincaber, and, regarding it as his duty to accept the responsibilities of a resident laird, he reluctantly gave up his professional work to the great regret of his many patients and professional friends.

Spare of figure, athletic in build, and brought up with facilities for outdoor life, he developed a fondness for games, and always kept himself physically fit. It is related that on one occasion he walked in one day from Edinburgh to Gartincaber, a distance of forty-seven miles, thus repeating the remarkable feat previously performed by his father. As a student he regularly played Rugby football, gaining his place in the University XV as a three-quarter back. As a sprinter he won many events at athletic sports. He was the first to introduce into Scotland the method of running between strings, and he himself pegged out the "lines" when they were first employed in the University sports. He took an active part in the efforts which were made to secure the athletic field at Craiglockhart. The motto of his life was "thoroughness," and in all that he attempted he never failed to keep this principle prominently before him.

In 1880 he married his cousin, Miss A. R. de Maule Urmston, who as his devoted partner for fifty-seven years untiringly assisted and encouraged him in his daily work. She predeceased him by a few months.

KENNETH HAROLD WATKINS, M.S., F.R.C.S.

We announce with regret the death, after a motor accident in Germany, of Mr. Kenneth Harold Watkins of Manchester, at the age of 34. Kenneth Watkins was the son of Dr. H. E. Watkins, medical officer of health for Newton-in-Makerfield, Lancashire. He began his medical career at the Manchester University Medical School and continued it later at St. Thomas's Hospital and in Freiburg. He was awarded the Bradley Memorial Scholarship in clinical surgery while still a student in 1926, and a prize in clinical medicine in 1927, when he qualified M.B., Ch.B., with second-class honours. In the same year he took with honours the M.B., B.S. of London, proceeding to the London degree of M.S. in 1931, a year after he had obtained the F.R.C.S. He had acted as a house-surgeon and later as the assistant resident surgical officer of the Manchester Royal Infirmary; as house-surgeon of the genito-urinary department of the Salford Royal Hospital; and he had been registrar and medical officer of the Christie Hospital. In 1932 he was attached to the Brady Urological Institute of the Johns Hopkins Hospital at Baltimore as a Rockefeller Fellow, and in 1933 he was one of the Hunterian professors of surgery of the Royal College of Surgeons.

On his return to Manchester after twelve months in the United States he specialized in urological surgery and became honorary surgeon for genito-urinary diseases to the Manchester Northern Hospital and to the Christie Hospital, holding at the same time the post of urological assistant at the Royal Infirmary, Manchester. In recent years he had contributed several articles to the special surgical and urological journals, perhaps the last of them being a paper written in collaboration with Dr. Fergus R. Ferguson, on paralysis of the bladder and associated neurological sequelae of spinal anaesthesia, which appeared in the April issue of the *British Journal of Surgery*. Kenneth Watkins was recognized as one of the most outstanding of the younger surgeons in Manchester. His academic career had been a brilliant one, and there seemed no doubt that the same degree of distinction would attend his specialized work in later life. His tragic death at the early age of 34 will be deeply regretted by all his colleagues in Manchester and particularly by those who have been associated with him in his work at the Royal Infirmary. A memorial service was held at the chapel of the Manchester Royal Infirmary on Tuesday.

Mr. J. B. Macalpine writes:

The tragic news of the death of Kenneth Watkins comes as a bitter blow to Manchester medical and surgical circles, where Watkins was greatly esteemed and loved. It must be long since medicine in this city has had to mourn one for whom the future seemed more bright—even though he was as yet scarcely beyond the threshold of success—or has lost a man who, while relatively young, will be more difficult to replace. It was in 1930 that Watkins became my house-surgeon in the urological department of the Salford Royal Hospital, and it was here that I first learned his sterling qualities, his industry and helpfulness, his intelligent handling of his cases, his cheerful acquiescence when called upon to do things lying outside his scheduled duties. From then onwards I had followed his career with interest, and perhaps some pride. After leaving me he was successful in obtaining the Rockefeller Fellowship which gave him a year in the well-known urological service at the Johns Hopkins Hospital, and there his innate energy and enthusiasm enabled him to extract the fullest possible value from the rich opportunities at his disposal. During his stay in America he also visited other important clinics in that country. Watkins then planned a trip to certain German urological departments, and passed approximately three months on the Continent. It was during this visit that he met the lady whom he subsequently married. Returning home, Watkins spent a year doing routine general surgery as resident surgical officer to the Manchester Royal Infirmary before finally devoting his whole time to urology. On leaving the Infirmary he quickly obtained a number of hospital appointments. At the Northern Hospital and at the hospital at Crumpsall he organized urological units, while at the Radium Institute, as registrar and medical officer, he was fortunate in being able to observe closely the irradiation of growths of the urinary tract. Watkins selected his life's specialty early, and having done so he pursued his objective unswervingly with exemplary consistency and zest. It seems hard that so much forethought and preparation should be wrecked just when they were maturing and becoming available to humanity. Wherever he was known it was recognized that Watkins was a man marked out for advancement, and, indeed, much of the hope of Manchester surgery lay with him. He was universally admired, respected, and beloved. He spoke ill of none and none spoke ill of him. He made no enemies but many friends. His tall lithe figure, his cheery laugh, and his thoughtful, purposeful, but happy mind will be sadly missed. He leaves a widow and two small children, to whom we extend our sincere sympathy.

"T. M.," another colleague of his, writes:

The profession in Manchester has been shocked by the untimely death of Kenneth Watkins. He was a very gifted young surgeon, and his skill in his special branch was unsurpassed. Greatly as we admired him professionally, however, it was as a man we valued him most. I was fortunate, coming as a stranger to Manchester eighteen months ago, to be his successor. No man could have had a truer friend. The kindness he bestowed upon me is beyond description. He was always ready to teach specialized urological procedures, and the debt I owe to him can never be expressed. During my constant association with him I have never heard him say an ill word of anyone. He was completely devoid of malice. The very high esteem in which he was held by his colleagues and patients reciprocated in very small part the kindness and consideration he had for his fellows. Endowed with all virtues, his was a character of the very rarest quality.

MR. A. J. STORY

With the death on September 11 of Mr. Arthur John Story the deaf have lost a friend and one of their most indefatigable workers. The Blind and Deaf Act of 1893 made the education of deaf children compulsory, and the duty of providing suitable education was placed upon the local school boards. In 1896 Mr. Story became headmaster of the first residential school to be established under the new Act. He continued in this post until 1923, and in 1925 became secretary of the National Institute for the Deaf. He was a member of the Council of the Royal Society of Teachers from 1910 to 1925, and chairman of the National College of Teachers of the Deaf in 1910–11 and 1920–21, and served as lecturer and examiner on speech and language to the college. He edited *The Teacher of the Deaf* for twenty-one years. Since his retirement from the position of head master of the Blind and Deaf School at Stoke-on-Trent the whole of his activities have been devoted to establishing the National Institute for the Deaf. His one thought seemed to be his work. He had no hobbies and no recreations. After a day's routine at the Institute he would go home, sink into his chair, and continue in one form or another the work which was so dear to his heart. For some years he made a habit of doing a crossword puzzle daily, and apart from this small diversion and reading the daily news his whole thought was given over to his work.

As secretary—the first and only secretary so far—to the National Institute for the Deaf he was excellent. Having played the dominant part in the formation and development of this institution he was complete master of all details and matters connected therewith, which covered a very wide field. He will therefore be a very difficult man to follow, and it can be said that there is no one more knowledgable than he was in the matters with which the Institute has to deal.

Under a careless and unkempt exterior there existed a gentle, generous, and soft-hearted nature, always ready and willing to give help to anyone requiring and seeking it, not only in the form of advice in any difficulty, but also help of a more material nature. A serious man with a keen sense of humour and a good knowledge of men, he was highly successful in the management of his committees—not always an easy task—and he had the respect, affection, and good will of all. His loss will be deplored by all who knew him, for he made many friends and few, if any, enemies.

THE LATE SIR ROBERT WOODS

Dr. H. C. Drury writes: Having known Sir Robert Woods intimately since his student days, through the whole of his professional life, I would like to add something to the bare announcement of his death. He looked so strong and so young that it was a severe shock to read in our morning paper that he had left us.

One remembers him as a student dissecting over and over again everything connected with the larynx. This he made the specialty of his practice in after life, and with what wonderful success we in Ireland know. Perhaps few if any surgeons had such a record as his in the removal of the entire larynx for malignant disease. Not content with operation, he trained his patients afterwards so that they could live for years in comfort with a certain intelligible voice. Skill and thoroughness were the outstanding characteristics of his work, leaving nothing to chance. His amazing vitality and conscientiousness enabled him to get through an enormous amount of work. His fame increased the number of his patients, so that hospital kept him, on his dispensary days, steadily at work there from 10 a.m. till after 1 o'clock, for he gave to the poor just

as great patience and care as he gave to the more well-to-do. He was so skilful in his workshop that he made many adaptations of his instruments and appliances. His house was a charm; everything in it was a delight to one with any appreciation of art. As a host he was just Robert Woods—no side, a hearty cheerful welcome, and the best of everything.

Dr. JOHN CORCORAN of Worcester Park, Surrey, died on August 26 following an operation in a London nursing home. John Corcoran was the youngest son of Mr. Patrick Corcoran of Ballinadee, Bandon, Co. Cork. He qualified L.R.C.P., L.R.C.S.Ed., L.R.F.P.S.Glas. in 1914 through the old Queen's College, Cork—now a constituent college of the National University of Ireland—and the Edinburgh Medical School. He first practised in Ireland, and was house-surgeon at the Mercy Hospital, Cork. In 1916 he joined the Royal Army Medical Corps, with which he served in Ireland and India. After the war he entered into practice in Sutton, Surrey, and also held several hospital appointments in London. As the senior member of a partnership in one of the most populous and rapidly growing residential areas of outer London he brought to his professional work skill, experience, and the qualities of earnestness and enthusiasm. He loved his work for its own sake, and his thorough and painstaking methods inspired confidence in his patients and respect from his colleagues. In addition to the exacting duties of his general practice he acted as honorary anaesthetist and physician to St. Anthony's Hospital, Cheam. Dr. Corcoran upheld the highest traditions of the profession, and his characteristic Irish *bonhomie* and charm of manner made him a general favourite. It is safe to say that there was no more popular doctor in the district, where he lived and worked with such benefit to the community for close on twenty years. His loss will be sincerely regretted by his colleagues, and particularly by those associated with the work of the Surrey Panel Committee, of which he was a member. Though professional interests dominated his life, he was a keen sportsman and was particularly devoted to shooting and golf in such intervals of leisure as the exigencies of a strenuous working career permitted. He had been a member of the British Medical Association since 1923, and he took an active part in the London Irish Medical Golf Society.

The following well-known foreign medical men have recently died: Dr. DOMENICO TADDEI, professor of clinical surgery in the University of Florence, author of textbooks on surgical diagnosis and pathology, and editor of *La Clinica Chirurgica* and co-editor of *Rassegna internazionale de clinica e terapia*; Professor ALFRED LUGER, an eminent physician of Vienna, aged 58; and Lieutenant-General CARLO GUALDI of Naples, formerly inspector of health for Southern Italy, aged 76.

LONDON HOSPITALS AND AIR RAIDS

In June the Ministry of Health took over from the Home Office the hospital side of air raid precautions. The Ministry has accordingly assumed the responsibility and, in consultation with the London County Council and the voluntary hospitals, made arrangements for organizing all kinds of hospital accommodation in London (including casualty clearing as well as base hospitals) which might be required for the treatment of civilian air raid casualties. To assist in this work the Council has temporarily seconded for work at the Ministry one of its senior medical officers, who is acting as hospital officer for the London district and working out detailed plans for the various hospitals. In addition the Council has purchased on behalf of the Ministry a large amount of extra equipment, and is co-operating in every possible way subject to the general advice and direction of the Ministry.

Medical News

The Chairman of Council, Sir Kaye Le Fleming, and Dr. J. W. Bone have been returned unopposed as Direct Representatives of the profession in England and Wales upon the General Medical Council for a period of five years from November 1, 1938. Sir Kaye Le Fleming and Dr. Bone were selected by the Divisions in England and Wales to receive the support of the British Medical Association.

The annual dinner of the Middlesex Hospital Medical School will take place at the Savoy Hotel on Friday, September 30, at 7.30 p.m., with Dr. G. E. S. Ward in the chair.

The annual dinner of past and present students of University College Hospital Medical School will be held in the library of the medical school, University Street, W.C.1, on Friday, October 7, at 7.30 p.m., with Dr. F. Clayton in the chair. Applications for tickets (price 12s. 6d., exclusive of wine), accompanied by remittance, should be made not later than October 6 to the dinner secretary.

The annual dinner of University College Hospital Medical Women's Association will be held at the Langham Hotel, Portland Place, W.1, on Friday, October 7, at 8 p.m., with the president, Miss Gwendoline Smith, in the chair. Tickets are priced 10s. 6d. each (exclusive of wine), and members intending to be present should notify the secretary, Dr. A. L. Winner, 41, Devonshire Street, W.1, not later than October 4.

The West London Medico-Chirurgical Society will hold a dinner meeting at the De Vere Hotel, Kensington, W.9, on Friday, October 7, at 7.45 p.m. The presidential address will be given by Dr. Maurice Shaw on "Heredity and Medicine" at 8.30 p.m.

The eighth annual dinner of the British College of Obstetricians and Gynaecologists will be held at Claridge's, Brook Street, W.1, on Friday, October 28, at 8 p.m. The official guests will be Dr. Robert Hutchison and Mr. Hugh Lett.

The annual prize distribution of Charing Cross Hospital Medical School will be held at the hospital on Friday, September 30, at 4 p.m.

The sixth Congress of the Italian Society of Plastic and Aesthetic Surgery will be held in the Policlinico, Umberto 1, Rome, next October when the chief subject for discussion will be facial trauma in war surgery. Further information can be obtained from Professor Riccardo Galeazzi, Via Sistina 4, Rome.

The Congress of the German Orthopaedic Society will be held at Giessen from October 3 to 5 under the presidency of Professor Pitzler.

The sixty-second international postgraduate training course of the Vienna Medical Faculty will be held from September 26 to October 8, and the full programme can be obtained from the office of the Vienna Medical Faculty, Allgem. Krankenhaus, Alserstrasse 4, Vienna IX.

A meeting of the Royal Sanitary Institute, arranged in conjunction with the Welsh Branch of the Society of Medical Officers of Health and the North Wales Centre of the Sanitary Inspectors' Association, will be held at the Guildhall, Wrexham, on Friday, September 30, at 5 p.m., when discussions will take place on "Physical Fitness in Relation to Public Health," to be opened by Dr. T. P. Edwards, and "The Food and Drugs Act, 1938," to be opened by Mr. D. Thomas. Dr. Charles Porter will be in the chair.

The University of Glasgow announce the opening of the Gardiner Institute of Medicine by Lady Gardiner on Wednesday, September 28, at 4.30 p.m., when the Right Hon. John Colville will give an address.

The King has appointed Dr. George Leslie Milburn to be a Member of the Executive Council of the Presidency of Saint Christopher and Nevis.

No. 36.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 10, 1938.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for : (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland. Median values for the last 9 years for (a) and (b).

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for : (a) The 126 great towns (124 in 1937) in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases ; a blank space denotes disease not notifiable or no return available.

Disease	1938					1937 (Corresponding Week)					1929-37 (Median Value Corresponding Weeks)	
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)	(a)	(b)
Cerebrospinal fever	17	3	6	2	—	15	2	7		—		
Deaths		1	—				2	1				
Diphtheria	1,184	146	165	59	17	1,241	178	168	49	34	941	176
Deaths	18	4	4	2	—	27	3	4	1	—		
Dysentery	33	6	33		—	54	7	20		—		
Deaths				—	—				—	—		
Encephalitis lethargica, acute	5	—	—		—	3	—	1		—		
Deaths		—					1					
Enteric (typhoid and paratyphoid) fever	36	2	5	9	1	67	9	7	8	4	79	
Deaths	4	1	—	—	—	1	—	—	—	—		
Erysipelas			56	4	5			55	2	5		
Deaths		—					—					
Infective enteritis or diarrhoea under 2 years												
Deaths	48	9	7	7	3	67	18	20	12	8		
Measles			37		4			17		2		
Deaths	5	—	—	—	—	2	—	—	—	—		
Ophthalmia neonatorum	99	9	20		1	105	15	38		2		
Deaths												
Pneumonia, influenzal†	307	26	10		4	375	32	1	1	1	411	32
Deaths (from influenza)	9	2	1	1	—	9	2	1	2	—		
Pneumonia, primary			121	6				109	5			
Deaths		11		—	6		11		10	2		
Polio-encephalitis, acute	3	—				2	—					
Deaths		—					—					
Poliomyelitis, acute	73	6	13		1	60	18	1		—		
Deaths		—					1					
Puerperal fever	2*	2	11	5	1	41	6	12	1	—		
Deaths		—					—					
Puerperal pyrexia	139	14	20		2	139	15	24		—		
Deaths												
Relapsing fever	—	—			—	—	—	—		—		
Deaths												
Scarlet fever	1,625	121	372	65	91	1,668	146	344	79	36	1,666	237
Deaths	7	2	3	—	—	4	1	4	—	—		
Small-pox	—	—	—		—	—	—	—		—		
Deaths	—	—		—	—	—	—		—	—		
Typhus fever	—	—	—	—	—	—	—	—	—	—		
Deaths				—	—				—	—		
Whooping-cough			232		15			84		5		
Deaths	8	1	3	—	—	16	3	8	2	—		
Deaths (0-1 year)	263	43	46	38	9	277	42	60	27	13		
Infant mortality rate (per 1,000 live births)	43	35				47	35					
Deaths (excluding stillbirths)	3,923	745	597	166	133	3,602	674	515	164	113		
Annual death rate (per 1,000 persons living)	9.6	9.5	12.2	11.2	11.8	8.9	8.5	10.5	11.2	10.0		
Live births	6,261	1,104	883	403	227	6,353	1,168	892	391	231		
Annual rate per 1,000 persons living	15.4	14.1	18.0	27.3	20.1	15.7	14.7	18.2	26.7	20.5		
Stillbirths	247	38				269	39					
Rate per 1,000 total births (including stillborn)	38	33				41	32					

* After October 1, 1937, puerperal fever was made notifiable only in the administrative county of London.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

EPIDEMIOLOGICAL NOTES*

Acute Poliomyelitis

In England and Wales 73 cases of acute poliomyelitis were notified during the week under review, the same as in the previous week, while for London the figure of 6 showed an increase of one over last week. Notifications of two or more cases were received from: Braintree and Bocking (urban) 2, Church 2, East Elloe 2, Ipswich 2, Kenilworth 2, Lewisham 2, Middlesbrough 3, Reading 3, Rochdale 2, Shrewsbury 2, Swansea 2. The occurrence of 3 cases (of which one patient has died) at Middlesbrough, where no cases have hitherto been notified in the present year, indicates a further extension of acute poliomyelitis in the North. At the time of going to press 2 further cases have been reported in this town. Notifications in Scotland dropped from 14 to 13 during the week under review, the chief centres being: Edinburgh 4 (3), Ayr 2 (0), Glasgow 2 (3). During the week ended August 27, 319 cases were notified in Germany, compared with 165 cases in the previous week; the districts chiefly affected were: Baden 17, Bavaria 18, Cologne 89, Frankfort 13, Saxony 19, Wiesbaden 13, Wurtemburg 55. During the same week 34 cases were notified in Austria, of which 11 were in Vienna. During the week ended September 3 notifications in Holland rose from 54 to 67, of which 37 were in the province of South Holland (30 in the previous week). Of the 37 cases, 7 occurred in the commune of Alphen, and 6 each in Rotterdam and The Hague. In Sweden during the first fortnight of August notifications rose from 36 to 101 (including 11 non-paralytic cases); the districts chiefly affected were: province of Jämtlands 49, Kristianstads Province 16.

Typhoid Fever

Of the 36 cases of typhoid fever notified in England and Wales during the week, in only four centres was more than one case notified—London 2, Barking 2, Farnworth 2, Southampton 2; the London cases were reported from Paddington and Hampstead (in the latter case the disease was contracted in the South of France).

Diphtheria and Scarlet Fever

There was a slight increase in the notifications of diphtheria in England and Wales and in London during the week under review—1,184 (1,130) and 146 (127) respectively. The chief centres in which increases were noted are: Gateshead 14 (5), Easington 18 (8), Leyton 10 (4), Walthamstow (Essex) 6 (0), Bristol 12 (7), Bolton 12 (6), Liverpool 58 (52), Leicester 15 (5), Lambeth 13 (7), Lewisham 18 (7), St. Pancras 10 (3), Norwich 11 (3), Esher 5 (0), Coventry 10 (3), Leeds 13 (5), Sheffield 29 (14), Swansea 5 (2). Deaths from diphtheria fell in the 126 Great Towns from 19 to 18 during the week under review, and in London from 7 to 4. A considerable rise was noted in the incidence of scarlet fever in England and Wales during the week, the numbers notified being 1,625, compared with 1,391 in the previous week; in London a corresponding increase was recorded—121 (97). The chief increases were in: Slough 5 (0), Stockport 16 (8), Gateshead 6 (2), Ilford 9 (2), Gillingham (Kent) 6 (0), Liverpool 47 (28), Bolton 6 (0), Battersea 6 (1), Bethnal Green 5 (0), Hampstead 5 (0), Islington 11 (7), Ealing 7 (3), Tynemouth 7 (0), Croydon 6 (2), Birmingham 40 (32), Kingston-upon-Hull 20 (10), Leeds 32 (18), City of York 8 (4). There were 7 (1) deaths in the 126 Great Towns during the week—2 in London and 1 each in Eastbourne, Portsmouth, Barrow-in-Furness, Nottingham, and Stoke-on-Trent.

Measles and Whooping-cough

Five deaths from measles were recorded in the 126 Great Towns of England and Wales during the week—2 in Leeds and 1 each in Bradford, Kingston-upon-Hull, Birmingham. The average daily admissions to the L.C.C. fever hospitals were 2 (3). In the metropolitan boroughs in which measles is notifiable the numbers rose in five—Bermondsey 4 (0), Fulham 3 (0), Hampstead 3 (0), St. Pancras 6 (2), and Stepney 2 (1)—and were *nil* in Battersea and Greenwich. In Scotland notifications rose from 21 to 37 during the week under review. Increases were noted in: Glasgow 12 (1), Dundee 6 (1), Edinburgh 4 (0), Dunfermline 3 (1). In the 126 Great Towns of England and Wales 8 (6) deaths from whooping-cough were recorded: 1 each in London, Kingston-upon-Hull, Liverpool, Salford, Stockton-on-Tees, Warrington, Gloucester, and Poole. In Scotland 232 (171) cases of whooping-cough were notified, of which 196 (141) occurred in Glasgow and 23 (15) in Paisley, and 3 deaths—2 (2) in Glasgow and 1 (0) in Paisley.

Cholera

During the week ended September 10 the number of cases of cholera in Shanghai fell from 421 to 245 (120 deaths), and in Hong Kong from 19 to 12 (10 deaths). In British India the incidence of cholera declined in the Central Provinces during the week—5,486 cases and 2,361 deaths, compared with 8,884 cases and 3,566 deaths in the previous week; there were 452 cases and 213 deaths in Bombay (Presidency), 219 cases and 77 deaths in Madras (Presidency), 215 cases and 100 deaths in the United Provinces, 32 cases and 19 deaths in the North-West Frontier Province.

Births and Deaths for the Second Quarter

The Registrar-General's return of births, deaths, and marriages in the thirteen weeks ended July 2 records that 164,257 live births were registered in the second quarter of this year, which is 480 more than the number registered in the second quarter of 1937 and corresponds to an annual rate of 16.1 per thousand of the estimated mid-year population for 1937. The number now reported is more than 6,000 above the average figure (157,901) for the second quarter during the preceding five years. Of the total, 7,256 were illegitimate. Male births numbered 84,166 and female births 80,091, giving a proportion of 1,051 males to 1,000 females. The stillbirths registered during the quarter were 6,632—13 more than the number recorded in the second quarter of last year and corresponding to an annual rate of 3.9 per cent. of the total births registered.

Deaths (excluding stillbirths) numbered 119,177, and were 18,749 fewer than in the preceding quarter, but 652 more than in the corresponding quarter of 1937. The total deaths correspond to an annual rate of 11.7 per 1,000 of the population. The mortality of infants under one year of age was equal to 48 per thousand registered live births, being 9 per 1,000 below the average of the ten preceding second quarters.

The highest death rates from certain epidemic diseases in the 126 Great Towns (Table V) during the quarter were as follows:

From *measles* 0.57 in Barnsley, 0.53 in West Hartlepool, 0.41 in Bury, 0.28 in Gateshead, 0.26 in Kingston-upon-Hull, and 0.24 in Gillingham; from *whooping-cough* 0.29 in Keighley, 0.23 in Great Yarmouth, 0.16 in Birmingham, and 0.14 in Gateshead and in Salford; from *diphtheria* 0.63 in South Shields, 0.52 in Newcastle-under-Lyme, 0.38 in Great Yarmouth, 0.37 in Keighley, and 0.35 in Wigan; from *influenza* 0.75 in West Bromwich, 0.60 in Dudley, 0.57 in Hastings, 0.39 in Lincoln, and 0.38 in Walsall.

The highest death rates per 1,000 live births from *diarrhoea and enteritis* among children under two years of age were 18.7 in Brighton, 16.7 in Sunderland, 13.7 in Birkenhead, 13.6 in Enfield, 13.3 in Newport (Mon), and 13.0 in Northampton.

CORRIGENDUM

In the issue of July 2 the figures given for cholera at Shanghai and Hong Kong during the week ended June 18 were repeated erroneously under the heading "Plague"; there were no cases of plague in these towns during the week in question.

* Except where otherwise mentioned, figures in parentheses refer to the week preceding the one under review.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS should be addressed to the Advertisement Manager. Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

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QUERIES AND ANSWERS

Cleaning Slides for Blood Films

Dr. A. C. EVANS (Denbigh), in reply to "J. S. M." (*Journal*, August 27, p. 480), writes: "Rub both sides and the ends of the slides well with "monkey brand" cake slightly wetted with water; wash under tap-water and dry with a clean, non-starched, smooth towel. Then wash with alcohol and again dry; flame both sides of the slides well in a Bunsen flame in order to burn away any grease. After cleaning, handle the slide by the side edges and avoid touching the surfaces or ends. The washing with alcohol can often be omitted. Cleaning with "monkey brand" is not recommended if the slides are subsequently to be used for the examination of sputa, etc., for tubercle bacilli; it tends to scratch the slides so that with reflected light artefacts appear.

Dr. A. C. COLES (Bournemouth) also writes: I have found the following by far the best method for cleaning new or used slides. In the case of used slides it is necessary to remove the balsam or immersion oil with methylated spirit. Then prepare a paste of pulv. cretae. prep., whiting, and water in a clean ointment pot; rub a little of this over the surfaces of the slide with an old shaving or tooth brush, or a piece of cloth, but not with the finger. Wash in water and polish with an absolutely clean cloth. In most cases this is all that is necessary, but if one is going to prepare the slides for staining flagella—or in fact for any aqueous or saline material in which there is little or no albumin—it is advisable to smear the surface of the slides with either a piece of soap or the cut surface of a raw potato (as motorists prepare their wind-screens), and then polish with a clean cloth. One can easily test the result by placing a drop of water on the slide and spreading this out with the end of another slide or a needle. If the water spreads evenly and remains so the slide has been cleaned satisfactorily. It should be noted, however, that it is quite impossible to attain this result in a small proportion of slides, probably owing to some peculiarity in the glass itself. I used to clean new cover-glasses by dropping them, one by one, into sulphuric or nitric acid, or a mixture of sulphuric acid and potassium bichromate, but now find that all that is necessary is to keep them in a wide-mouthed bottle of methylated spirit. In a paper on the staining and microscopical demonstration of filterable viruses in the *Journal of the Royal Microscopical Society* (1935, **55**, 249) I have fully described the methods of cleaning slides, etc., and an easy method of packing films for postage, which displaces that abomination—the racked microscopical slide-box.

Income Tax

Sale of General Practice—Book Debts

"A's" practice consisted up to December 31, 1937, of several public appointments, eye specialist work, and a general practice. The last-mentioned was sold as from that date, and the outstanding book debts were sold with it, say a nominal amount of £*x* debts for £*y* in cash. "A's" professional accounts were made on a cash basis up to December 31 yearly, but for convenience and thinking it more correct he proposes that the first account for the reduced practice shall be made up as for the year to April 5, 1939, ignoring the quarter to April 5, 1938. The inspector of taxes claims to include in the account for the year to December 31, 1937, the £*x* received on sale of the practice, and requires an account for the subsequent period which shall include the quarter to April 5, 1938.

*** In our view there is no liability on "A" to bring in the £*x* as income of the year 1937, or indeed of any other period. In dealing with questions arising on cash accounts it is important to remember that in the early years of a practice the Revenue will not accept the cash basis, holding quite correctly that it is only after three or four years that the amount of the cash receipts is a fair index of the gross income of the practice. They therefore claim in such circumstances to bring in any increase in the value of the book debts to raise the cash receipts to the correct amount. The obvious corollary is that in the final year of a practice the cash receipts are an adequate measure of the gross income, and if the value of the book debts at the end of proprietorship be added, the result must be to inflate the gross income unduly. Or looking at the same point from a different angle, if the realized value of the book debts at December 31, 1937, be included as professional receipts, then the corresponding value of the debts as at December 31, 1936, must be deducted. If the inspector of taxes adheres to his contention our correspondent would be well advised to place the facts before the Secretary, the Board of Inland Revenue, Somerset House, W.C.2, and ask for an official ruling on the matter. With regard to the subsequent account, it really seems to make little difference whether an account is prepared for the year to December 31, 1938, or for the fifteen months to March 31, 1939—in which case the assessment would be on one-fifth of the result for the quarter to April 5, 1938, and on four-fifths for the year to April 5, 1939. But an account covering the quarter to March 31, 1937, will be necessary either as a separate account or as part of an account for a longer period. "A" should of course see that the assessment for the year to April 5, 1938, is reduced by excluding the "general" practice as for the last quarter of that year.

LETTERS, NOTES, ETC.

Uterine Swabs in Puerperal Pyrexia

Dr. C. S. THOMSON, jun., writes from the Royal Maternity Hospital, Belfast: It was surprising to read in Dr. R. M. Fry's article in the *Journal* of August 13, page 342, that preliminary cervical and intra-uterine swabs are unnecessary in the diagnosis of puerperal pyrexia. The finding of streptococci in a vaginal swab will surely necessitate further uterine ones, both for purposes of prognosis and for medico-legal protection. Again, without uterine swabs, how may we be sure that *B. coli*, staphylococci, etc., are not being found merely as vaginal commensals? In view of the extra time, danger, and expense of a second bacteriological investigation one must question this advocacy of the preliminary vaginal swab.

Effect of Oestrogens on Ovum

Dr. LOUISE E. FRASER (Aberdeen) writes: It is comfortably assumed by most people that a spermatozoon which escapes a spermaticide will produce a healthy foetus on uniting with a healthy ovum. Whether this assumption is correct has not, I think, been definitely proved. Within the next two years, however, we are likely to have an easily administered abortifacient of some form of oestrogen which will act directly on the ovum. What is likely to be the result of a sub-lethal dose on a foetus? It will surely be interesting to investigate this point on rabbits and rats, and to compare the nutrition of mature or premaure but viable young from treated animals with the young of untreated animals.